The Newsweekly for Information Technology Leaders
October 7, 1996, Vol. 30, No. 41, 158 Pages, $3/Copy, $48/Year

COMPUTERWORLD

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Revenge of the IS worker

By Julia King

The Carlson Cos. in Minneapolis has been searching fruitlessly for six months for a full-time Oracle Corp. database administrator. Still no takers.

Prudential Securities, Inc. in New York can't hire enough full-time information systems staffers to build applications and fix date problems in the firm's 30 million lines of Cobol code. Instead, it has hired more than 50 contrac-

Careers

IS workers, *page 135*

WHAT'S INSIDE

- To get back in the good graces of IS, PointCast preps a server upgrade. **See story, page 6,** *by Mitch Wagner and Patrick Dryden.*
- Bill Gates to keynote Unix Expo? To read about that and for more preshow coverage, turn to **page 14.**

UNIX EXPO plus

- IS struggles with hiring issues. **See stories, pages 1, 12, 16 and 135,** *by Julia King, Kim S. Nash and Thomas Hoffman.*

Sun pours Java client

Early users back rollout of network device later this month

By Frank Hayes and Sharon Gaudin

Sun Microsystems, Inc. will unveil the first in a line of Java-based network computers Oct. 29 in New York, *Computerworld* has learned.

And alongside the thin-client machine, code-named Mr. Coffee, will be about a dozen large corporate customers that plan to purchase it, including banks, retailers and transportation companies.

Unlike conventional PCs, network computers — or thin clients — download software across a network when needed, making applications much simpler to manage.

"We're buying in," said Doug Withington, manager of multimedia marketing at FTD, Inc. in Downers Grove, Ill. "We're very excited about it, and we're making the commitment big-time."

FTD anticipates making network computers

Sun pours, *page 15*

Mr. Coffee

Sun's first network computer, code-named Mr. Coffee, was designed to run a single application downloaded from a server on the network

MEMORY: 4M to 8M bytes

NETWORK CONNECTION: TCP/IP

MONITOR: Provided by customer

KEYBOARD: Provided by customer

WEB BROWSER: HotJava

Retailers move wares online, tie sites in to business plans

By Mitch Wagner

Until the $1.5 billion Express clothing chain went online, the only way to buy its wares was to walk into one of its 753 stores nationwide and make a purchase.

"We didn't — and still don't — have a paper catalog," said Les Duncan, chief information officer at Express, which went online in July to sell its chic line of women's wear. "We had to create an order-processing and fulfillment service for our online business."

Business strategy key

Express is typical of an emerging class of sites that sell products on the Internet. Not content to simply throw a few items on the Internet and hope they sell, these firms have embarked on in-depth strategies aimed at aligning their Internet site with the company's business strategy.

Also key to these companies is providing solid security and a reasonable business justification for the online sites. "There really is no difference between the Internet and

Retailers, *page 28*

TIM RICE

CIO Les Duncan *says the Express site is a 'start-up' but has the support of his technology-oriented CEO*

Hybrid Web apps offer big returns

By Kim S. Nash and Mitch Wagner

American President Lines is doing it. Federal Express Corp. has already done it. Baylor Health Care System hasn't done it yet but plans to early next year.

These firms are leading a trend to build applications that let World Wide Web surfers — either the general public or select business partners — see, hear and touch otherwise off-limits internal data.

The payback from these hybrid public/private networks can be big, according to a *Computer-*

Hybrid Web apps, *page 16*

PRODUCT REVIEW

For more on intranet search engines, see Buyer's Guide, page 95.

Managing Web-spectations

Have you been besieged with user requests for World Wide Web projects? Learn how to sprinkle some reality on those Internet dreams.

Managing, page 88

BUD PEEN

Newspaper

Up Front

Nervous lambs

Woody Allen once wrote, "The lion shall lie down with the lamb. But the lamb won't get much sleep." That's how the open standards lambs must feel right now about bedding down with the Microsoft lion.

When Microsoft last week handed over ActiveX administration to the Open Group, it looked more like a defensive gesture to fend off Sun Microsystem's Java. That Internet programming language and its other spin-off products — such as the upcoming Java network computers (see story, page 1) — may indeed be the most serious threat to Windows that Microsoft has faced yet.

ActiveX is a terrific technology for Windows platforms, and for Windows clients, it's a clear winner over Java.

But ActiveX isn't multiplatform, nor will it be under Microsoft's control. For corporate applications that have components based on Unix, Macintosh, VMS, MVS or any number of non-Microsoft operating systems, the platform-agnostic Java is the only pure Internet play.

Microsoft's only hope to persuade corporate IS to take ActiveX seriously at the enterprise level is to persuade third-party developers to port it to non-Windows platforms. Thus the belated embrace of a standards process other than its own.

But how serious Microsoft is about standards remains open to question. Will ActiveX enhancements created by other members be adopted into the standard? More important, will Microsoft implement ActiveX standards it didn't develop?

The early indicators aren't good. Microsoft hand-picked Open Group to administer the ActiveX specification, a fact that rankles some independent developers. The desktop giant also has a big job ahead in convincing skeptical developers that it is really committed to open systems.

The ActiveX standards initiative is a defensive tactic by a nervous company. Corporate IS will be watching Microsoft's conduct with the Open Group closely — all the better to see how peacefully that lamb sleeps next to this particular lion.

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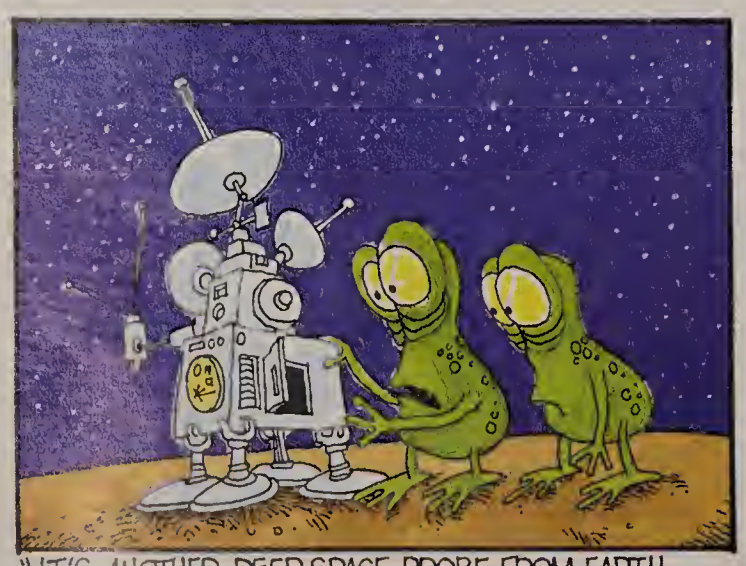
The 5th Wave by Rich Tennant



IBM plugs network holes

By Bob Wallace

IBM this week will launch a product barrage that will draw it closer to its goal of providing one-stop shopping for users' networking needs.

In its largest rollout in several years, IBM will address key areas of LAN switching, campus backbone networking, WAN access and routing — areas where Big Blue has lagged.

The mega-announcement is IBM's first step in a long-term strategy to show that it will have "a complete WAN/LAN remote-access package," said Frank Dzubeck, president of Communications Network Architects, Inc., a consultancy in Washington.

The IBM announcements will include an array of new offerings [CW, Sept. 30] and enhanced and repackaged existing products.

IBM previously acknowledged its weaknesses in LAN switching when it entered into a multifacated reseller alliance with switching upstart Xylan Corp. in Calabasas, Calif., earlier this year.

Next week, IBM will announce Token Ring switching modules, Asynchronous Transfer Mode (ATM) add-ons and high-speed WAN modules for the Xylan switches, said sources briefed by IBM.

According to the sources, the Xylan switches will be called the 8274/8273 LAN RouteSwitches.

IBM will stay true to its heritage and announce a new Token Ring switch that supports Source Route Bridging (SRB), which inexplicably isn't supported on its current system. SRB is a way to pass traffic from one Token Ring LAN to another.

In the routing field, IBM will roll out a repackaged version of its 2210 edge router, a low-end system that will cost $1,300 to $1,400, as opposed to the original system's $3,000 cost, the sources said.

For campus networking, the company will unveil an ATM backplane for its 8260 multiprotocol switch. That will give the box the horsepower boost it needs to support a variety of LAN switching options.

News Shorts

Visual J++ shipped

Microsoft Corp. last week began shipping its Visual J++ tool set. The $99 product, modeled after Visual C++, supports ActiveX components and add-on tools and libraries from several third-party vendors. These tools include a set of generic Java objects, a graphic effects tool and a utility to add electronic-mail functions to Java applets. Users are also able to generate both ActiveX and Java code.

Wal-Mart to beef up IS

Wal-Mart Stores, Inc. Chief Information Officer Randy Mott has vowed to cut the retailer's project backlog to zero by Jan. 31, 1998. To help reach that goal, Wal-Mart will add 300 information systems staffers to the 1,000 already on board. Mott said Wal-Mart has already cut its development cycle from 27 to 23 months and plans to have that cycle down to 12 months by early 1998.

Amdahl targets low end

Amdahl Corp. today is slated to announce low-end models for its air-cooled mainframe line. The Millennium Global Server will come in a uniprocessor model rated at 45 MIPS and a pair of two-processor machines rated at 64 MIPS and 85 MIPS. Available starting in January, the servers start at about $500,000.

IS values performance

IS executives are placing systems performance and the use of technology to make money ahead of cost-cutting, according to a survey of 700 IS professionals in the U.S., Europe and Japan. The study, prepared by Find/SVP's Strategic Research division in Palo Alto, Calif., found that information bottlenecks to corporate data are the next biggest challenges IS executives face.

Online commerce eyed

Oracle Corp. plans next week to unwrap a set of electronic commerce offerings, with WebServer software as the delivery vehicle and Oracle7 as the back-end database. The offering will support NetSolutions, the recently unveiled object development package.

SSA benefits snafu

Due to a computer glitch, the Social Security Administration has been shortchanging benefits recipients by up to $850 million for the past 24 years. About 700,000 citizens were affected, but 402,000 are already receiving back payments. Unfortunately, about 60,000 recipients passed away without getting their fair share. According to SSA officials, the glitch affected the benefits of only 1% of the people who continued to work after retirement. The glitch has been corrected.

Bay rolls out routers

Bay Networks, Inc. last week introduced the Advanced Remote Node, a powerful and expandable branch-office router that starts at $2,195 for one LAN port and two WAN ports. It ships next month. Also unveiled were compression hardware, available now starting at $3,000; and ControlCenter, a management application that lets users configure and download software to routers in groups, which will ship in December.

Apple shaves Burma

Apple Computer, Inc. has cut off operations in Burma, citing a 4-month-old Massachusetts law that forbids state agencies to contract with any company doing business in the country, which is ruled by its military. Apple, which sells computers to the Massachusetts state government, is the first company to pull out of Burma due to the selective purchasing law, according to a report in *The Boston Globe.*

SHORT TAKES **Compaq Computer Corp.**, based in Houston, said it will cut U.S. prices on some of its ProSignia servers by as much as 17%. This will bring total price cuts on the models to 27% since August.... **AT&T Corp.** will make **Microsoft**'s Internet Explorer browser the default client for users of its WorldNet Internet access network.... **IBM**'s OS/390 operating system software has received Unix branding from X/Open Co. The branding covers OS/390 Versions 1, 2 and later releases.

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STEVE MUNDAY

Software

No mart is an island

Information-hungry users leery of monolithic data warehouses are flocking to build cheaper, easier data marts. But if your marts can't share knowledge, your data mining projects might come up dry. We have some tips.

See page 53.

Terrorism bill pits safety vs. privacy

By Mindy Blodgett

You get to the airline ticket counter and provide identification. Then the clerk taps in to a vast database — which has details about your marital status, travel habits and income — to see if you have been flagged as a potential terrorist.

That checkup will become routine if Congress approves the Clinton administration's $1.1 billion antiterrorism bill. The House Appropriations Committee may vote on parts of the package, including the passenger-screening database system, as early as this week.

JOEL BOWER

Privacy activists oppose the database proposal, saying it will lead to harassment and stereotyping of passengers. Critics also charge that the system will inevitably disseminate inaccurate data that may be difficult for citizens to get corrected.

"Databases would give airlines a false sense of security at a substantial cost to personal privacy," said David Sobel, legal counsel at the Electronic Privacy Information Center, a nonprofit advocacy group in Washington. "People already have a very difficult time fighting inaccurate information in their credit reports."

New Hampshire lawyer Dan Coolidge, co-author of a guide for road warriors, said the proposal threatens privacy. "I worry about not having access to those records. And it gives me a queasy feeling that airline employees would have access to all this information on me," he said.

Already, Northwest Airlines is developing a passenger profile system under an existing $500,000 grant from the Federal Aviation Administration.

The proposal calls for airport security personnel to develop the passenger profiling database from information supplied by airlines and other, unspecified sources. A "civil liberties advisory board" would oversee the project.

But the American Civil Liberties Union and Computer Professionals for Social Responsibility (CPSR) in Palo Alto, Calif., complained that there are no guarantees that information such as medical history and political affiliation wouldn't be in the database.

Karen Coyle, Western regional director for the CPSR, said unscrupulous airline employees might use the information for monetary gain.

Although the proposal raised concerns about cost and administrative duties, the Airports Council International applauded it.

"We're supportive of the profiling because of the need for better security," said Dick Marchi, senior vice president of technical and environmental affairs. "The profiling is aimed at quickly identifying low-risk passengers — the classic being the family of four . . . going to Orlando."

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PointCast tries to make nice with IS

By Mitch Wagner
and Patrick Dryden

Dan Tulledge, an IS manager at AlliedSignal, Inc., doesn't mince words when it comes to PointCast.

"PointCast is the most insidious application we've seen," Tulledge said. So much so that the Morristown, N.J., company — like many of its peers nationwide — has forbidden its users from running PointCast.

But his opinion might change.

PointCast is a free service that beams nearly continuous news updates over the Internet to off-the-shelf PCs that run Windows 3.1 or better. To view the updates, users just need free software distributed over the Internet by PointCast.

So why the vendetta? PointCast is a bandwidth hog. Every PointCast user has a more-or-less continuous connection to the Internet that provides quick updates of headline news and financial reports. End users love the immediacy. But some information systems managers hate the product; they said a few hundred PointCast users on a corporate network can create enough bandwidth demand to grind the entire network to a halt.

PATRICK DRYDEN

Allied Signal's Dan Tulledge: *'Insidious' PointCast software has been banned at the company*

None of that has escaped the attention of PointCast, Inc. in Cupertino, Calif. Company officials said they hope wary IS managers will soon start looking upon PointCast as their best pal. PointCast today is scheduled to unveil I-Server, a server-based version of PointCast. I-Server was designed to run inside the corporate firewall and drastically reduce bandwidth requirements for the service.

Cutting the bandwidth demanded by its namesake product could be a big help for PointCast. In a recent study by Zona Research, Inc., about a fourth of 110 IS managers contacted said they had developed company policies for regulating PointCast use. Three quarters of those IS managers with PointCast policies simply ban or discourage use of the product because of bandwidth problems.

But with I-Server, rather than having one stream of data coming through the firewall to each PointCast user, the data goes to I-Server inside the firewall, and I-Server distributes the data to end users. All that occurs under the control of the company's IS department.

And I-Server can be custom-configured to deliver company news to employees along with the global PointCast mix.

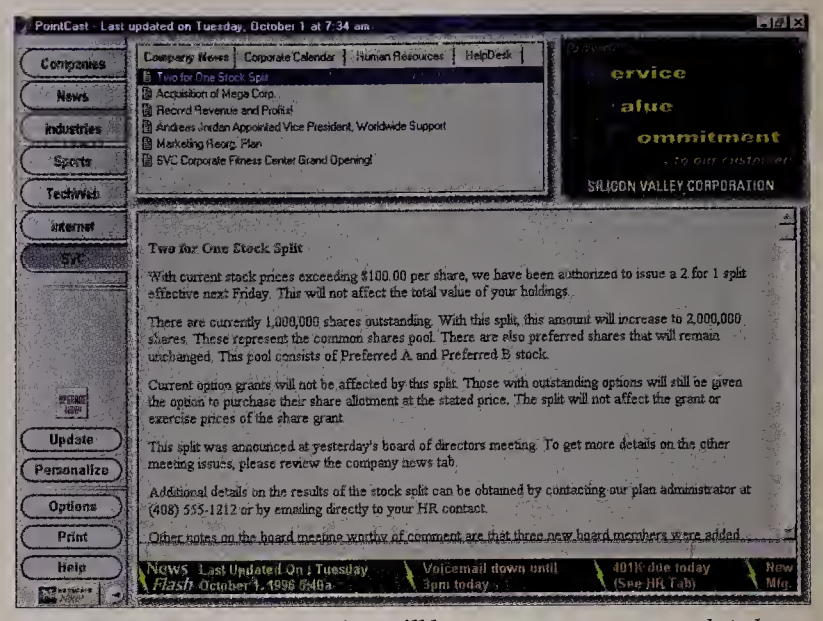
The product will be available next Monday and will cost $995. It runs on Windows NT.

Minimal impact

I-Server won't affect the way end users use PointCast. PointCast works in the following way: At intervals, the desktop software goes out on the Internet to the PointCast server and downloads news updates. The updates can be viewed by using PointCast's proprietary elient software or by loading the information into the Windows screen saver.

With I-Server, the desktop system looks for information on I-Server — inside the corporate firewall — rather than out on the Internet.

For now, the corporate information offered on PointCast I-Server will need to be hosted on World Wide Web sites, but that will change. PointCast is working with Lotus Development Corp. to let PointCast clients display data from Lotus Notes servers.



PointCast says its server version *will let corporate users get updated, customized news feeds without upsetting IS by hogging bandwidth*

Unisys Corp. is beta-testing the server for internal use. The company likes what it has seen so far, said Tom Burk, a consultant in new venture development at Unisys in Minneapolis.

"We needed a vehicle to push information out to users' desktops," he said. "Repositories don't work; people forget to check them."

But seeurity is a concern because the server and client software collect user data for demographic analysis by PointCast. The data collected includes the operating system that PointCast runs on, the Internet address of the machine and the name and electronic-mail address of the machine's user. Unisys is concerned that the information going back to PointCast shouldn't violate corporate confidentiality.

Gerry McCartney, chief information officer at the Wharton School of the University of Pennsylvania in Philadelphia, said he would like to see more avenues opened for corporate information on the intranet.

Right now, PointCast offers several "channels," one each for headline news, news from any of several local newspapers, weather and lifestyle news.

Doing away with bookmarks

Technology companies are cutting deals with content providers to bring online newspapers, magazines and other sites — mostly consumer-oriented — directly to consumers' desktops.

For the content companies, it is a way to have their products delivered directly to the user that is preferable to waiting like wallflowers on the World Wide Web for the consumer to surf by and stop at the site.

"Whoever really uses their bookmark file? People bookmark sites, and then they never come back," said Ben Graboske, director of systems and software design at New York Times Electronic Media Co. in New York.

The *Times* started being beamed directly to users last week as part of the Inbox Direct feature of Netscape Communications Corp.'s Navigator 3.0. Inbox Direct works like this: The E-mail software built in to Navigator will display Hypertext Markup Language the same way the Web browser does. Taking advantage of that feature, the *Times* and a dozen other newspapers, magazines and other companies are E-mailing whole Web sites to consumers who request the service.

Another option is to package the Web sites using any of the "off-line" readers for the Web. Those products download Web pages in bulk so that they can be cached on a PC's hard disk to speed up access and make Web pages available even when the user isn't connected to the Internet.

Examples include Traveling Software, Inc.'s WebEx, Open Market, Inc.'s OM-Express and Individual, Inc.'s Freeloader.

The main way off-line readers work is that users program them to find the Web sites they want. The programs also come preprogrammed with directions for downloading some Web sites. — *Mitch Wagner*

Corrections

Due to an editing error, the Viewpoint column "Intranet ads: Coming to a PC near you" [CW, July 29] incorrectly referred to a venture capitalist's "clients." It should have said "investments."

Due to a reporting error, "Scale questions dog Exchange" [CW, Aug. 12] incorrectly stated Exchange Server's 16G-byte message storage limit as 16M bytes.

In the Buyer's Guide ["DB2 sites pin Web hopes on Net.Data," CW, Sept. 23], the last line of grades should have been titled Development Environment, with the grades B, B+, A, B.

Due to an editing error, the subjects in a photograph for a Corporate Strategies story on Bob's Stores [CW, Sept. 23] were misidentified. The person on the left is Gary Marceau, warehouse management systems administrator. The person on the right is Bruce Fetter, vice president of logistics at Bob's Stores.

The more the merrier

PointCast plans by winter to broaden the content offered on its broadcast news service over the Internet.

The company currently offers its own headline news service, along with other channels that contain news from the Reuters Ltd. wire service and several other media sources. Those include Time Warner, Inc.'s Pathfinder service, *The Los Angeles Times* and *The Boston Globe.*

The company this month plans to turn over editorial control of its headline news service to Turner Broadcasting, Inc.'s Cable Network News.

Also, PointCast plans to add *The New York Times* to its service. And it plans to add local papers to give the service a down-home touch. — *Mitch Wagner*

Web management tools hit the market. See page 69.

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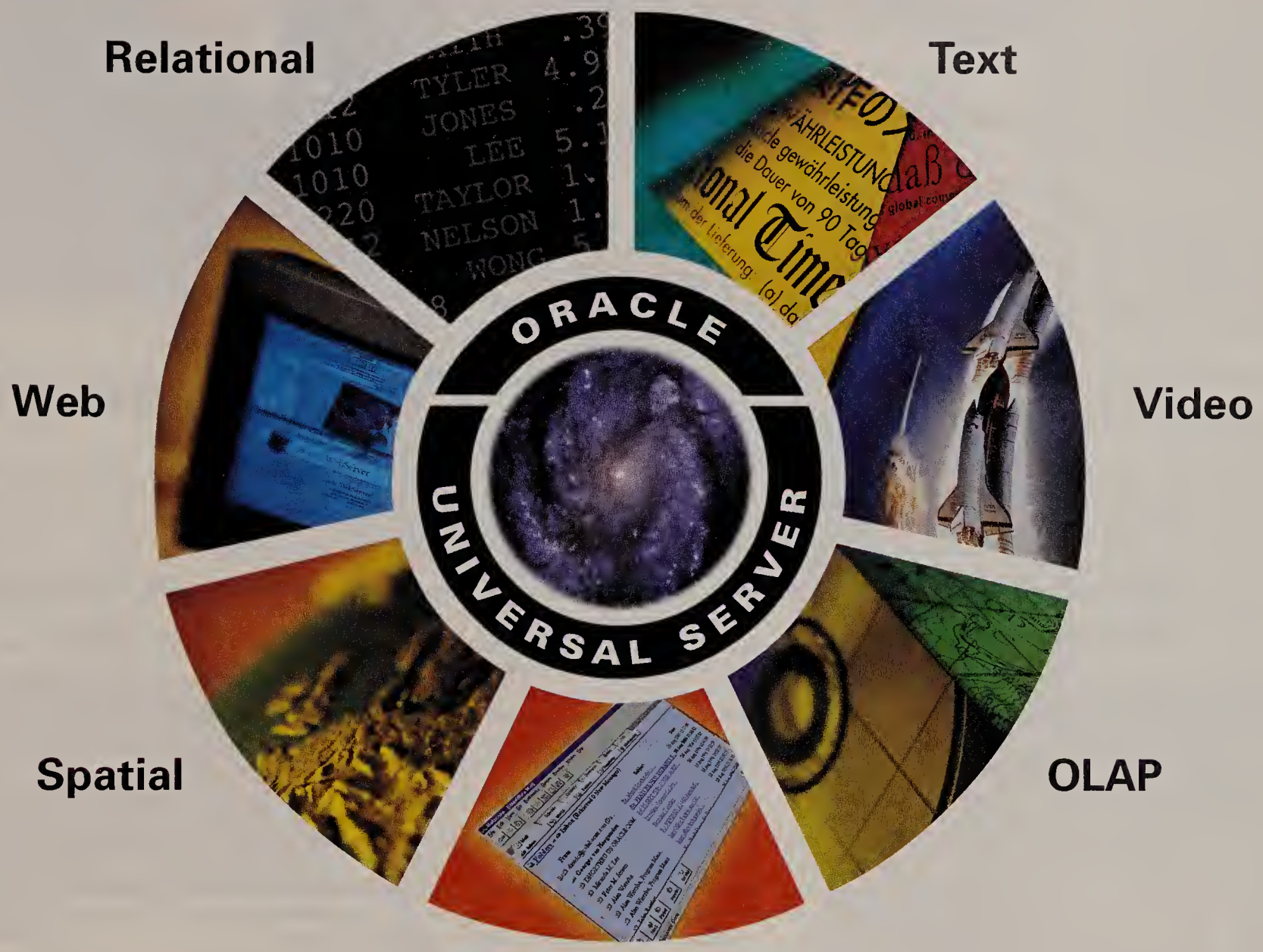

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Switched Ethernet prices head back down to earth

By Bob Wallace

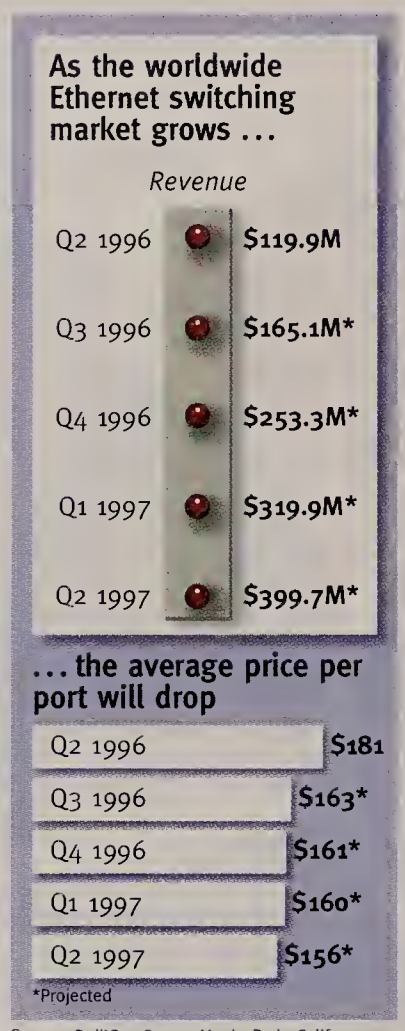
The cost of switched Ethernet networking is about to plummet. Top switch vendors are rolling out products that let information systems managers deliver the industry's hottest switching technology to each desktop for the cost of a gas grill.

Ethernet switching powerhouse 3Com Corp. started the price war last week with a product that provides 10 times the bandwidth of regular Ethernet hubs for $20 to $50 more per desktop connection.

The new Ethernet switch carries a list price of $120 per port. If history is any indicator, the street price will be even lower.

"The switched Ethernet price war has begun, which means the price of switched Ethernet to the desktop will come down dramatically over the next six to 12 months," predicted Tam Dell'Oro, president of Dell'Oro Group, a consulting and research firm in Menlo Park, Calif.

"3Com's competitors can't continue to let the company run away with this market," he added.



Source: Dell'Oro Group, Menlo Park, Calif.

Every six minutes

3Com shocked the industry 14 months ago when it rolled out the LinkSwitch 1000, an Ethernet switch with an industry-low $200-per-port price tag.

Dell'Oro said 3Com has shipped 1 million ports since then. The vendor said it ships one every six minutes — evidence that Ethernet switching is spreading like wildfire.

"We're using roughly 300 3Com Ethernet systems to provide 8,000 ports of switched Ethernet spanning our six campuses," said Bob Yannocone, manager of operations and network administration at Pace University in New York. "And we expect to save $200,000 by going with the new switch over the LinkSwitch 1000s."

"This is a great marketing strategy for Pace University, which will be able to offer each student a 10M-bit pipe to their dorm room," Yannocone said. "We have to do that to stay competitive with the many other area universities."

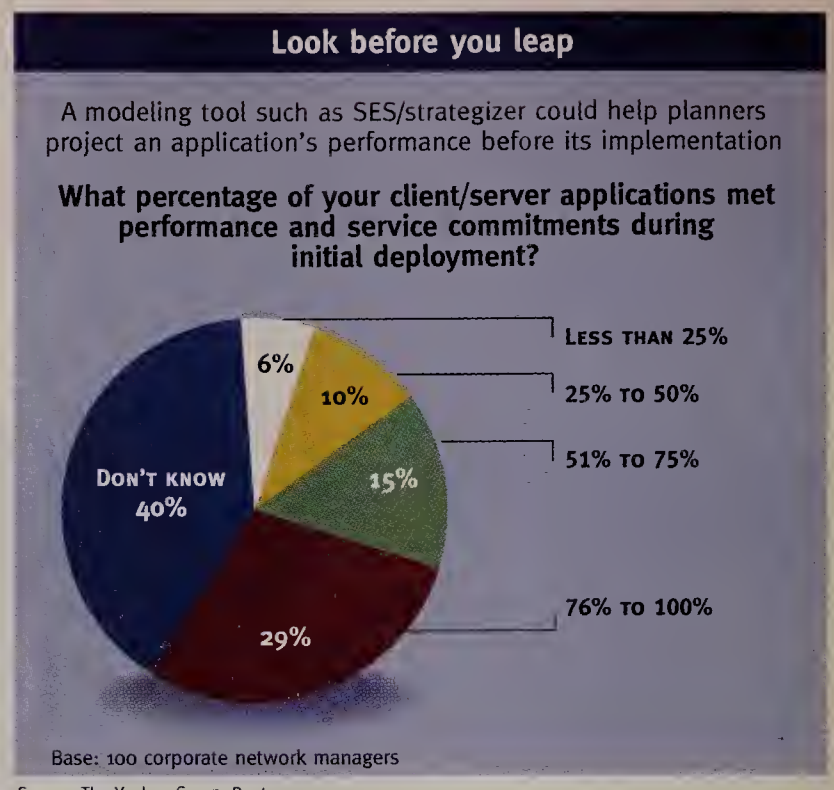
More users are finding fewer reasons to stand pat.

"It's crazy to stay with shared Ethernet hubs with the price of Ethernet switching plummeting and this rapidly becoming a dog-eat-dog market," said Virgil Palmer, manager of computing and telecommunications infrastructure service at Air Products & Chemical Corp. in Allentown, Pa. "It's come down to a cost issue because most of the Ethernet switches work equally well."

Down, down, down

Palmer said he eagerly awaits a price war. "It's a lot like the airlines, where when one carrier reduces rates, the others quickly follow, and the user wins. If someone doesn't follow, they lose business and market share," he said. But unlike airfare wars, Ethernet switch prices won't go back up, Palmer said.

Another user swept along with the Ethernet switching tide is McDonald's Corp. in Oakbrook Terrace, Ill., which will soon announce plans to run switched Ethernet to every desktop on its sprawling corporate campus. The fast-food giant plans to deploy more than 3,500 switched Ethernet ports.



Source: The Yankee Group, Boston

New Navigator to tie in to Collabra

By Kim S. Nash

Netscape Communications Corp. is expected to show a prerelease version of a browser upgrade at its user conference next week, according to sources close to the company.

Navigator 4.0 will sport several new features intended, in part, to better tie the World Wide Web browser to existing information systems.

New capabilities include the following:

- Integration with Collabra groupware, which Netscape acquired late last year.
- Support for Lightweight Directory Access Protocol directory services.
- The ability to customize some aspects of Navigator's configuration and look.

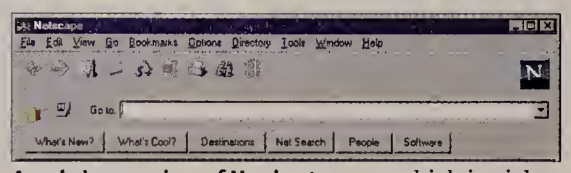
But those tricks may go unused for a while at many IS shops.

"We're not doing anything so fancy on our intranet that we care which browser [version] people use," said David White, vice president of technology development at Wells Fargo Bank in San Francisco.

The fast pace of the browser releases seems to have zipped past some companies' intranet deployment timetables, according to White.

Although Navigator 3.0 was released in August, "we're still [at Version] 2 point something and just fine," he said.

Navigator 4.0 is due before the end of the year.



An alpha version of Navigator 4.0, *which is nicknamed 'The Dogbert Version,' shows a revamped layout that replaces text-labeled buttons with graphical buttons*

No nasty surprises

Client/server delivery glitches may be avoided by modeling

By Patrick Dryden

The rollout of a long-awaited client/server project is no time to discover design quirks and network bottlenecks that slow response time for users.

Application developers and network managers can avoid such unpleasant surprises by first simulating end-to-end performance. But the complexity and cost of modeling software is often a drawback.

Client/server

That situation may change. This week, Scientific and Engineering Software, Inc. (SES) will introduce an option for modeling enterprise-wide client/server performance. SES/strategizer simplifies simulation on a Windows NT platform and costs about one-fourth the price of current design suites.

"They're trying to reduce network modeling from rocket science to, say, automobile science," said Paul Mason, an analyst at International Data Corp. in Framingham, Mass.

This unique tool can help a broad range of users understand the complexities of a multitier client/server implementation by providing an end-to-end application performance view, Mason said.

Beta tester Stephen Goodman, president of Baltimore consultancy Software Architecture and Engineering, Inc., called SES/strategizer "the only product that lets you precisely represent the behavior of an application in a distributed environment."

The first version of SES/strategizer, due in December, costs $9,500. Goodman and other analysts pointed out a weakness that SES said won't be addressed until the second release, which is expected in February.

Other suites automatically discover the configuration of systems and network connections or import that layout from a management platform. Initial users of SES/strategizer must drag and drop icons from a library to map their environment themselves.

That is a "rather significant shortcoming" for users with a complex network because they will have to do a lot of work to get started, Mason said.

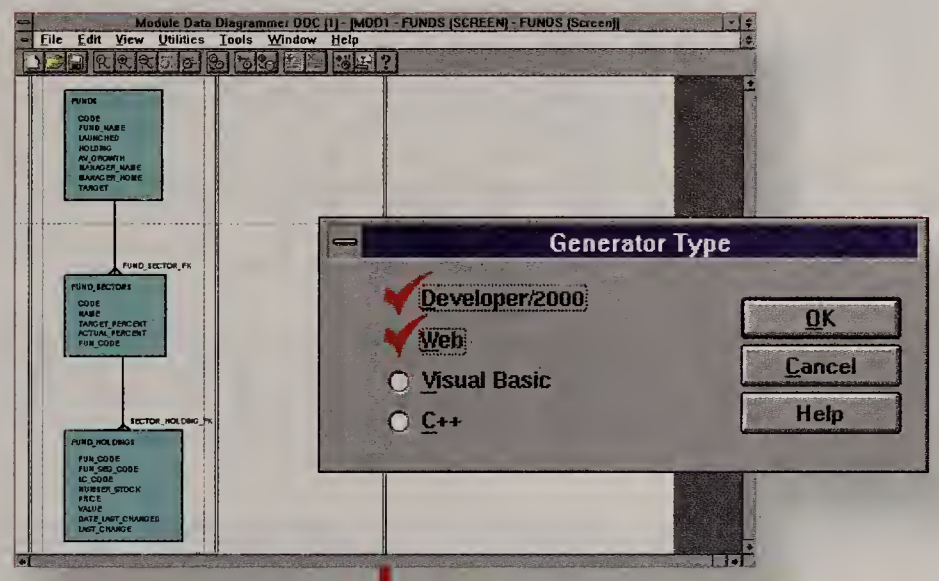
"Users hate tools without autodiscovery," said Jennifer Pigg, an analyst at The Yankee Group in Boston.

SES/strategizer compensates with models for hardware, network topology, applications and databases. It imports traffic flow information from the popular Patrol performance monitor by BMC Software, Inc. in Houston. Online documentation explains models and methodology, and a browser helps analyze results.

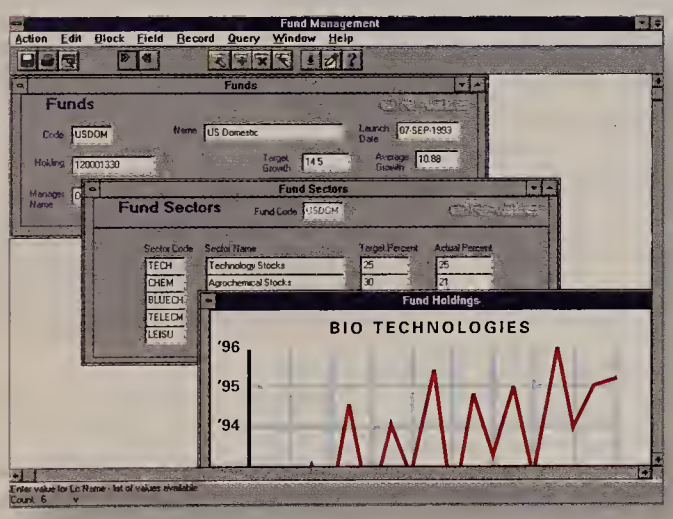
"We try to model all aspects so planners can predict the application performance that end users will see," said Doug Neuse, chief technical officer at SES in Austin, Texas.

Generate Web and Client/Server Applications

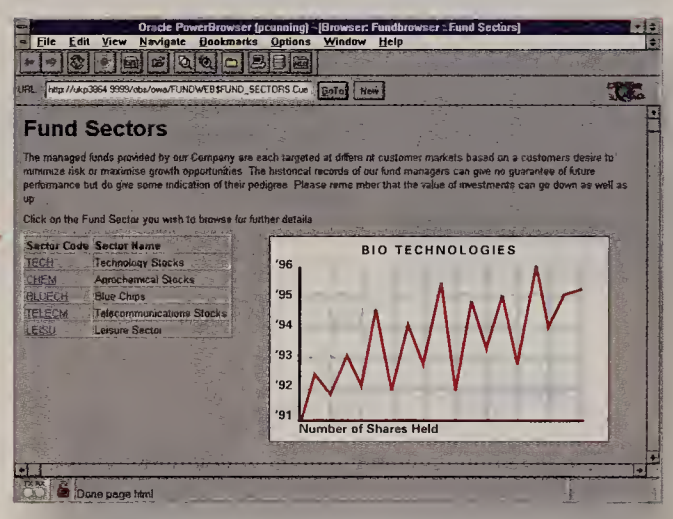
Oracle Designer/2000



Generate Client/Server Applications



Generate Web Applications



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Oracle goes after NT clusters

By Craig Stedman

Oracle Corp. this week will start throwing its database weight around in the Windows NT clustering market.

Trying to keep Microsoft Corp.'s SQL Server database from becoming the NT cluster database of choice, Oracle is announcing plans to expand its so far paltry support for NT clustering.

Three cluster-oriented products, including the parallel version of Oracle's database, are due to be released for NT during the first quarter of 1997 (see chart).

Customers who are looking at grouping their Windows NT-based systems into clusters said they have been waiting for Oracle to step forward.

"It doesn't do any good to have fail-over servers if you don't have fail-over applications," said Mike Carroll, manager of distributed systems for Ameritech Corp., a large Oracle shop based in Chicago.

Clusters link multiple servers so they look like a single system to users and applications. Other servers can pick up the processing slack when one server crashes, minimizing user downtime. And workloads can be spread across the different nodes to make efficient use of resources. The technology has been used for years with minicomputers and Unix systems and is starting to emerge in the Windows NT market.

Clustering a must

NT needs the reliability and availability that clustering would provide in order to run alongside Ameritech's mainframes, Carroll said. The regional telephone company wants to implement two-node NT clusters early next year, "and Oracle is probably the best distributed database on the market," he said.

Get it together

Oracle plans to make these products available for Windows NT clusters in early 1997

Product	Function
Failsafe 2.0	Supports fail-over between two cluster nodes
Oracle Parallel Server	Lets multiple nodes access applications at the same time
Oracle Parallel Query	Breaks down queries to run across multiple nodes

Of particular interest is Oracle Parallel Server, which lets the systems in a cluster share databases. That should reduce the need to feed and care for multiple copies of the same information, Carroll said.

Sharing databases among multiple NT servers is also high on the wish list of the state of Iowa's Department of Human Services. It is weighing a clustering approach as a way to ensure uptime for end users.

"We've got 3,000 workers depending on our information, and we can't afford to have it down," said Marc Travis, client/server and midrange data processing manager at the Des Moines-based agency. The agency uses SQL Server as its NT database, but it hasn't closed the door on Oracle, he said.

Oracle has had clustering products available for Unix systems since 1990. But its sole NT offering now is a two-node fail-over product called Failsafe that runs only on a special-purpose Compaq Computer Corp. server. That will be expanded to other NT platforms as part of next year's rollout.

Oracle announces a new Java tool set
See page 55.

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Epson DFX 8000	1,[illegible] cps	$1499	Parallel Serial Optional I/O Adapter	8,000 hours at 25% duty cycle	11,000 pages per month	NO
Output Technology Model 850XL	850 cps 240 lpm	$1995	Parallel/Serial	19,200 hours at 100% duty cycle	48,000 pages per month	YES
Output Technology Model 850XLE NEW	850 cps 240 lpm	$2295 $2995	Parallel/Serial Twinax/Coax and Parallel/Serial with Auto-Switching	20,000 hours at 100% duty cycle	55,000 pages per month	YES
Output Technology Model 800MTP NEW	800 cps	$2095	Parallel Serial	10,000 hours	48,000 pages per month	YES
Okidata 3410	500 cps	$1999	Parallel Serial Twinax Coax Optional	8,000 hours at 25% duty cycle	Not published	NO
Epson DFX 5000	1,[illegible] cps	$2089	Parallel Serial	8,000 hours at 25% duty cycle	6,000 pages per month	NO
Genicom 3810S and 3910IS	600 cps	$2175 $2999	Parallel Serial Parallel Serial or Twinax Coax Non Auto-Switching	10,000 hours at 25% duty cycle	Not published	NO

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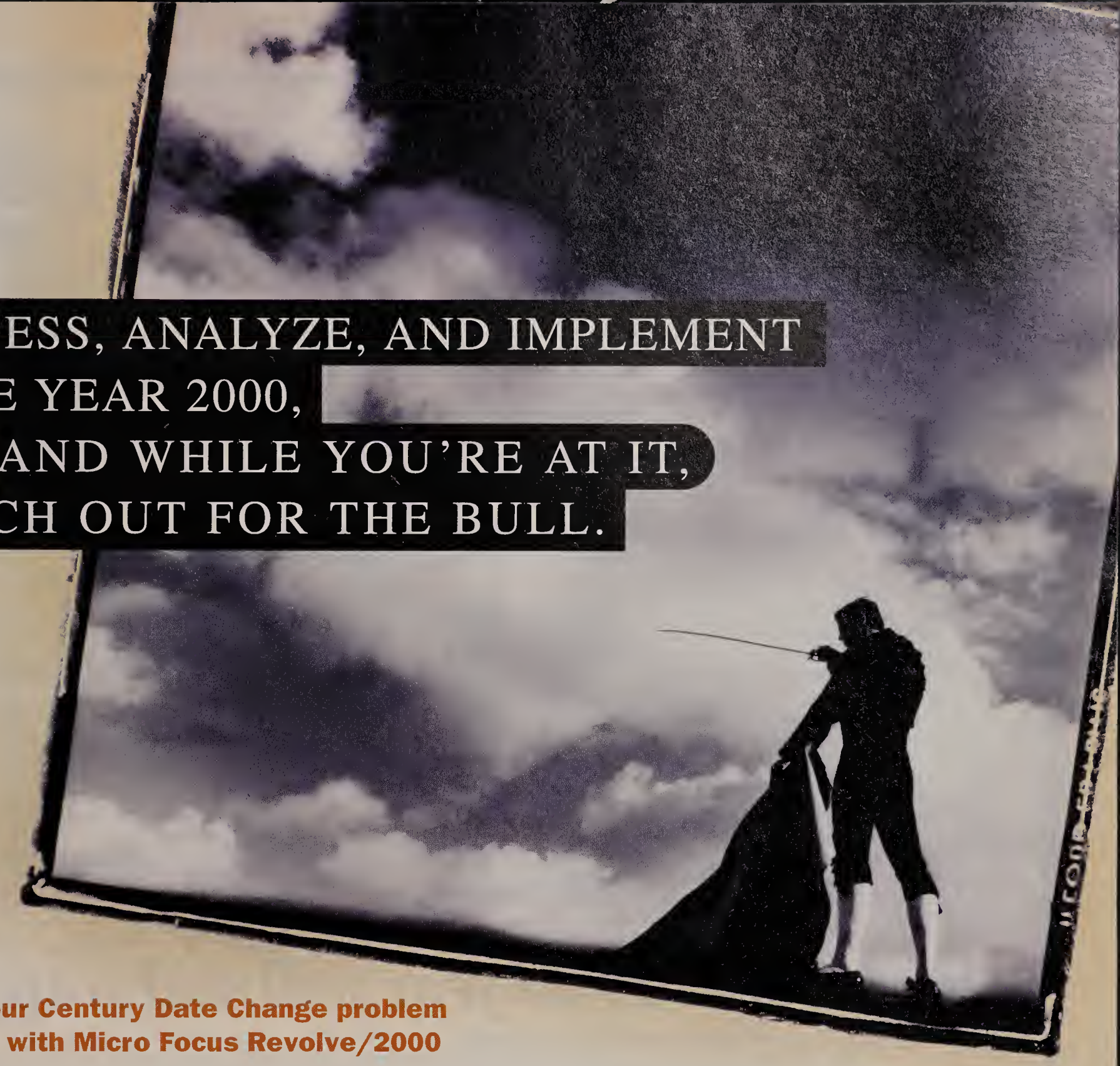

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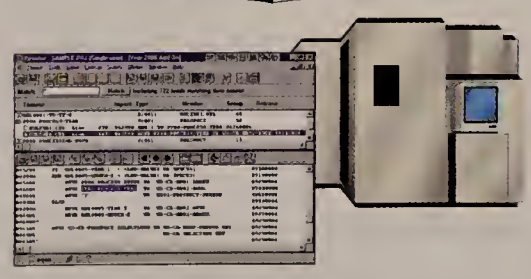

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CIOs battle 'net/intranet challenges

By Thomas Hoffman
SAN FRANCISCO

Most chief information officers see tremendous potential for conducting transactions over the Internet. The biggest problems they face are getting online and figuring out what to do once they get there.

So said many of the 450 attendees at the Society for Information Management's (www.simnet.org) Interchange '96 conference held here last week. The CIOs said their two biggest challenges are managing content and executing transaction processing over the Internet.

For example, Abbott Laboratories, which posted its home page on the World Wide Web last week (www.abbott.com), is still struggling to decide what information it should make available to customers, said John Yaukey, director of business systems at the Abbott Park, Ill.-based pharmaceutical company.

Content was also a key issue for Snap-on, Inc. in Kenosha, Wis., when it launched an intranet to distribute product data and strategic information to its 4,000 franchisees last year. To monitor the amount of sensitive information being sent from its Sun Microsystems, Inc. SPARCstation20 intranet server to its franchisees, Snap-on set up an editorial board to govern the distribution of data, said Lawrence G. Panatera, vice president and CIO at Snap-on (www.snapon.com).

The economic benefits of Snap-on's intranet are very attractive — Panatera estimated that the company spent $300,000 to set up its intranet infrastructure, or $75 per franchisee to communicate more effectively. Those infrastructure costs will also help the transportation company in the next year as it gears up to provide electronic commerce connections between its suppliers and large industrial customers using value-added network gateway connections.

Snap-on's Lawrence G. Panatera *says Internet-based transaction processing is one of the biggest challenges*

Yet Panatera and other attendees acknowledged that Internet-based transaction processing is one of the biggest challenges their organizations face. That explains, in part, why 80% of Fortune 500 companies have a Web presence, but less than 5% conduct transactions over the Internet, according to International Data Corp. in Framingham, Mass.

One of the biggest technical problems is that Hypertext Markup Language "was never intended to be applied to the world of transaction processing," said Jeff Tash, president of Database Decisions in Newton, Mass.

Webmaster shortage

Milliken and Co., a Spartanburg, S.C., textile manufacturer, is involved in a jointly funded project with other textile makers, Lawrence Livermore National Laboratory and several players in the retail industry. They are developing technologies to enable 'net-based order taking and delivery, said Jesse Johnston, Milliken's director of process improvement.

Many CIOs continue to wrestle with finding talented webmasters who can help them spearhead Internet and intranet initiatives. Gary Walden, director of information systems at Trimble Navigation in Sunnyvale, Calif., said he interviewed a recent college graduate who had six months of "real-world" business experience and demanded $65,000 to be his firm's webmaster.

Efficient management

The rush to the Internet and other new technologies "is like a meteor shower" being aimed at CIOs, said Tom Thomas, CIO at 3Com Corp. in Sunnyvale, Calif.

That anxiety was manifested in the results of a Best Practices study released at the Interchange '96 show by The Hackett Group, Inc. Since early last year, the Hudson, Ohio, consultancy has benchmarked information technology performance at 50 companies.

One example of an efficient management practice is at Amoco Corp. To free its IS staff from spending an inordinate amount of time supporting the company's 35,000 worldwide desktops, the Chicago company began enforcing hardware and software standards three years ago. Amoco's IS group demonstrated the potential savings to senior management "to show that we're bringing business value to the table," said Carl Williams, vice president of information technology at the petroleum giant.

— Thomas Hoffman

Trade groups roll out year 2000 seal of approval

By Gary H. Anthes
WASHINGTON

Flummoxed by year 2000 issues and uncertain where to turn for assistance? Fret not. Help is on the way.

The Information Technology Association of America (ITAA) and the Software Productivity Consortium (SPC) last week announced a program for certifying vendor competency in dealing with year 2000 software problems.

Its sponsors said it is the only program of its kind, but it is a late debut in the race to end-run the looming year 2000 crisis in computer software.

Commitment important

"Having a vendor certify a product is one thing, but this gives you a broader level of commitment that systems will work together," said Barbara McDuffie, director of IBM's year 2000 initiative. "This says that not only did IBM do it their way, they did it in line with the way industry views compliance." IBM's AS/400 division in Rochester, Minn., is the only firm to have been certified so far.

Kathy Adams, chairwoman of the federal Year 2000 Interagency Committee, said information systems managers are less interested in knowing which vendors have good methodologies — which is what the ITAA program measures — than they are in knowing exactly when various products will be compliant, which the program doesn't consider. Adams is also associate commissioner for systems design and development at the Social Security Administration.

Many vendors, especially those that sell commercial, off-the-shelf software, have been very poor at keeping users informed of their plans, Adams said.

A spokesman for the ITAA, an association of 9,000 information technology companies, said going to the level of detail of individual products wouldn't be practical given the number of products on the market and the time remaining until 2000. He challenged the notion that the program is late to the market, saying few companies were focusing on the year 2000 problem a year or two ago.

Certification process

Applying for certification costs $4,050 and requires a company to submit a completed questionnaire to the SPC. The questionnaire details in 11 areas the company's processes for developing new software and converting old software to meet year 2000 demands.

Companies that meet the certification criteria will be listed in a public database on the Internet (www.itaa.org/2000cert.htm) and will be given certification language and a logo that can be used in advertising.

Matt Hotle, a research director at Gartner Group, Inc. in Stamford, Conn., said users may find the certification program a useful "validity check" for their suppliers. "People are looking for outside bodies to say, 'Even though this company hasn't completed a lot of year 2000 work, they are doing the right things,'" he said.

Although the certification program is intended primarily for software and services vendors, several large user organizations have said they will get certified, according to Harris Miller, president of the ITAA in Arlington, Va. He declined to name them.

& **Year 2000 tools** hit the market. See page 59.

Year 2000 problems drag on

The Social Security Administration has some 30 million lines of software, 5% to 10% of it containing date fields, according to Kathy Adams, the agency's associate commissioner for systems design and development.

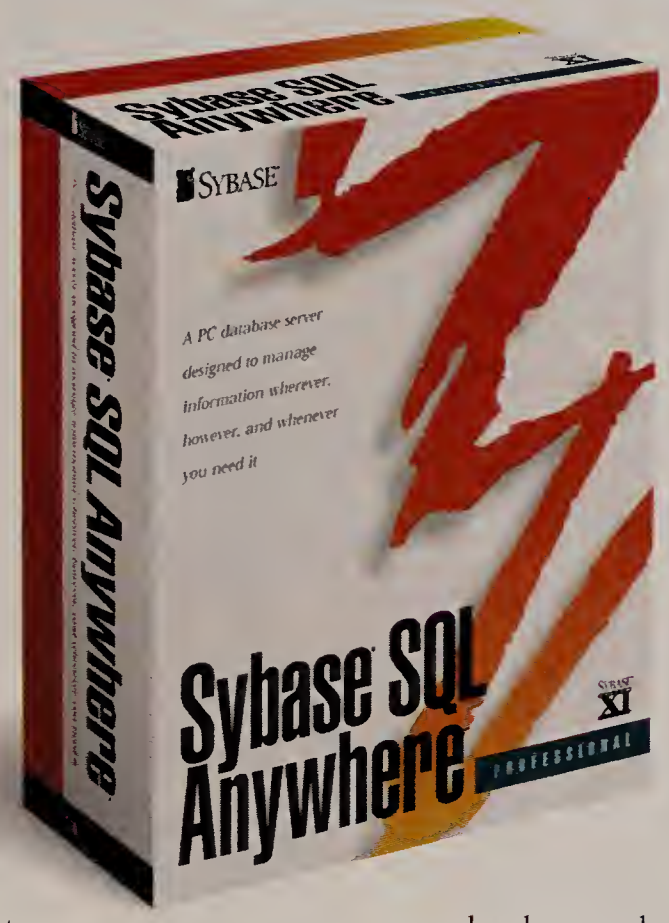
But despite having started in 1989, the agency is still working its way through that mountain of code in search of year 2000 pitfalls, she said.

Social Security estimates it will spend $30 million and use 300 person-years to prepare its systems for the date change. It expects to have completed the fixes by Dec. 31, 1998, leaving a full year for testing.

With many organizations just waking up to the year 2000 problem, how could this federal agency have been so far-sighted? "We were lucky — we had some software break in 1989," Adams explained. "It just went 'kaplunk,' which made us say, 'Hey, we're going to have stuff starting to break all over the place.'"

— Gary H. Anthes

For business travelers, it's like having your Intranet delivered by room service.



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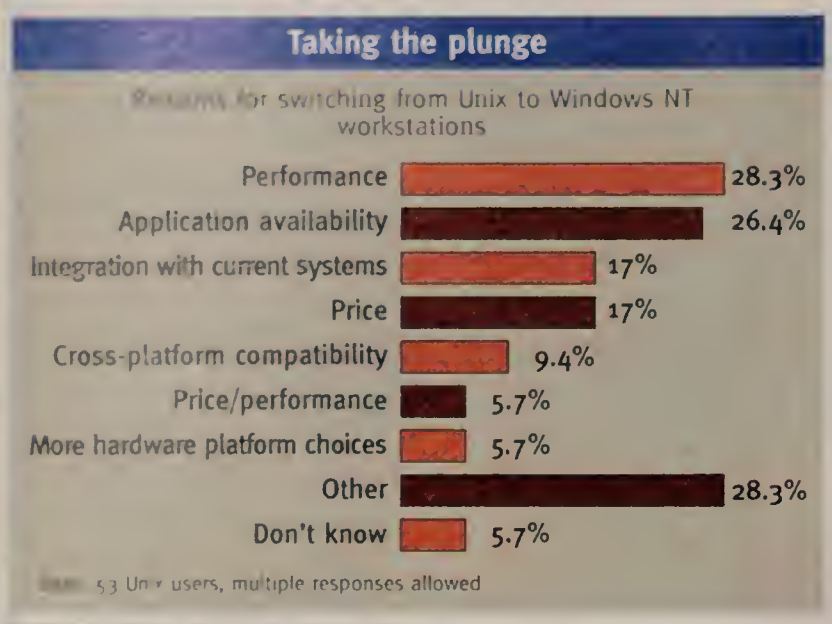


Gates to step into pro-Unix lion's den

By Laura DiDio

It doesn't exactly qualify as Moses coming down from the mountain with the Ten Commandments, but when Bill Gates delivers a keynote address at Unix Expo Plus in New York this week, it will be an historic event of sorts.

The first-ever appearance by the Microsoft Corp. CEO before the Unix faithful underscores the increasing convergence between the rival Unix and Windows NT camps. Gates' message: There's room for both Unix and Microsoft's Windows NT Server and Workstation in your organization.

He's got a point

"I won't be at the keynote to see Gates preach the gospel according to St. Bill, but when it comes to coexistence between Unix and NT, he's right," said David Pensak, senior research fellow for computer technology at Du Pont Co. in Wilmington, Del. "The question is, 'At what price?' I don't want to see Windows NT squeeze Unix out," he said.

A recent poll of 200 Unix shops by International Data Corp. (IDC) in Framingham, Mass., found that 55% of respondents also had Windows NT workstations installed (see chart at right). Those findings reflect the themes of the show: integration, coexistence and cross-platform development.

Jean S. Bozman, an analyst at IDC's Mountain View, Calif., facility, said although Windows NT usage is rising, it won't supplant Unix anytime soon.

"It's likely to be Unix *and* Windows NT for the next few years. There's a scalability issue involved before NT Servers can replace Unix servers," Bozman said.

But there are also large areas of intersection between the two environments, especially in the $20,000 to $30,000 price range.

That trend has led to user concern about how to effectively integrate the two systems. "There's definitely a need for more connectivity software to bridge the two worlds," Bozman said. Pensak added that Unix retains an edge over Windows NT when it comes to security and scalability.

Products on parade

Hundreds of vendors will demonstrate their wares at this week's Unix Expo Plus, including the following:

- **Sun Microsystems, Inc.** will continue its thrust into the enterprise server space with its Ultra Enterprise Clusters.
- **IBM** will revamp its RS/6000 line with a range of scientific and commercial systems.
- **Iona Technologies Ltd.** will display Version 2.1 of its Orbix object request broker tool kit.
- **Unisys Corp.** and **Data General Corp.** each will unveil servers and workstations.
- **Tatung Science & Technology, Inc.** will introduce a new Ultra 1-compatible workstation powered by a 200-MHz, 64-bit UltraSPARC 1 processor.

— Laura DiDio and Jaikumar Vijayan

Sun stands alone

Remains last commercial Unix vendor to shun Windows NT

By Craig Stedman and Jaikumar Vijayan

With Windows NT stealing away low-end customers, major commercial Unix vendors are rushing to put the Microsoft Corp. operating system on their hardware.

But not Sun Microsystems, Inc.

Long a bastion of anti-Microsoft zealotry, Sun says it will turn up its nose at the idea of selling Windows NT-based systems.

That include-me-out strategy will make Sun a bit of an odd duck at Unix Expo Plus this week in New York. The conference is expected to have a decidedly NT-friendly flavor for the first time.

WorldPort LA's Stan Johnson *says he 'may be going away from Sun'*

Sun's resolute rejection of Microsoft's alternative to Unix cut both ways with more than a dozen users and analysts last week. Some customers said Sun could endear itself to more Unix shops by maintaining its focus while rivals such as Hewlett-Packard Co. and IBM divide their loyalty and attention between Unix and NT.

But an equal number of users said Sun may be shooting itself in the foot.

"Sometimes you've got to be careful that you don't let your ego get in the way of your business," said Stan Johnson, MIS director at WorldPort LA, the Los Angeles port authority. Compared with Sun's Unix-only stance, HP deserves credit for "at least being willing to consider other options," he said.

Amy Jaffke, systems manager at the Los Angeles County Emergency Operations Center, said the organization is "having to wait an increasingly long time" to get Sun Solaris versions of workstation applications that are out first on Windows NT and Windows 95.

"Sun has to convince software companies to continue developing on Solaris. Or else they have to make themselves compatible with the market so users don't get left out to dry," Jaffke said.

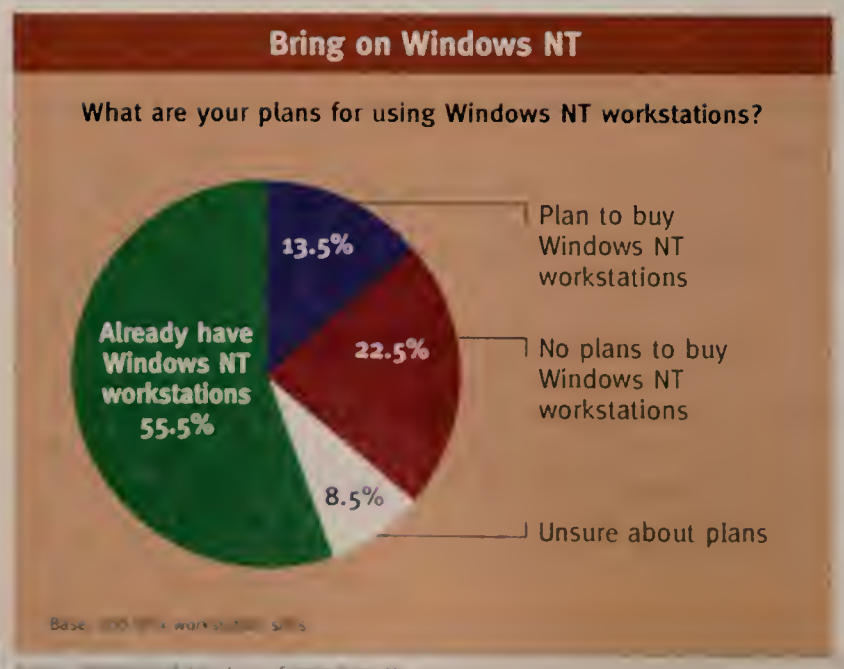
Edward Zander, president of Sun's computer subsidiary, Sun Microsystems Computer Corp., said Sun will have to walk away from customers who insist on Windows NT. But Sun hopes to make up those lost opportunities by grabbing more Unix server market share and flogging Java-based network computing technology, Zander said.

League of its own

Sun's strategy sounds entirely reasonable to users such as Cliff Triplett, director of information systems at AlliedSignal Engines in Phoenix. The engine facility, a unit of AlliedSignal, Inc., runs a mix of Sun and HP servers that "are in a different league" than Windows NT systems when it comes to power, he said.

Sun could reap big dividends if it "can secure the Unix game while HP and IBM are dinking around with Windows NT," Triplett said. Going with NT would just turn Sun into a me-too vendor, he said.

"Microsoft's strategy isn't necessarily the best thing for Sun," said Dennis Courtney, chief information officer at Dunlop Tire Co. in Amherst, N.Y. "Five years from now, I don't think we'll look back and say that Sun turned into the next Wang or Digital because it didn't sell Windows NT systems."



SGI stands firm, too

While Sun is the only major commercial Unix vendor to shun Windows NT, Silicon Graphics, Inc., a leader in technical Unix boxes, doesn't plan to jump on the NT bandwagon either.

"We are not going after the commodity mass market" as represented by Windows NT, said Dan Vivoli, SGI's vice president of desktop marketing.

"We can easily build an NT system. The unfortunate part is that we can't build in the features and the differentiators that we can with Unix," Vivoli said.

The company will continue to focus on delivering scalable, feature-heavy Unix RISC workstations and servers aimed mainly at the technical, engineering and scientific applications market.

For companies such as SGI and Sun, the near future could prove crucial, analysts said. "The next nine to 12 months will be a crucial testing phase for the Unix workstation market because we will see the full impact of Pentium Pro and Windows NT as the workstation alternative," said Tony Iams, an analyst at D. H. Brown Associates, Inc. in Port Chester, N.Y.

— Jaikumar Vijayan

Early users support Sun's Java-only Internet boxes

CONTINUED FROM PAGE 1

available for each of 20,000 affiliated flower shops worldwide, said Brian Shield, FTD's chief information officer. Workers in each shop could use the computers to pull up information on orders, pricing and advertising, he said. But using network computers instead of PCs will reduce the cost of owning the machines.

Sources at several other major Sun customers — including AT&T Corp., Fidelity Investments and Federal Express Corp. — confirmed last week that they, too, are testing the devices.

Although Mr. Coffee will cost substantially less than a PC, the true appeal of network computers is the much lower cost of ownership, said Barry Lynn, CIO at Wells Fargo Bank in San Francisco. Lynn recently told *Computerworld* that Wells Fargo was testing network computers and estimated the cost of ownership at about $2,000 per year vs. more than $10,000 per year to support and maintain a fully loaded desktop PC.

Network devices

"It's much simpler administration," said an information systems manager at a major investment bank who asked not to be identified. "It has the potential to deliver what X terminals once promised to provide with much greater functionality." The bank will begin testing Sun's machine shortly after the announcement.

But other users sounded a note of caution. "We are looking at them, and they seem to be pretty interesting in terms of their capabilities," said an IS manager at a large U.S. bank who also asked to remain anonymous. "But it's still pretty early [for Java]." The bank is currently trying out the Sun network computer.

> Wells Fargo has estimated the cost of ownership of network computers at about $2,000 per year vs. more than $10,000 per year to support and maintain a fully loaded desktop PC.

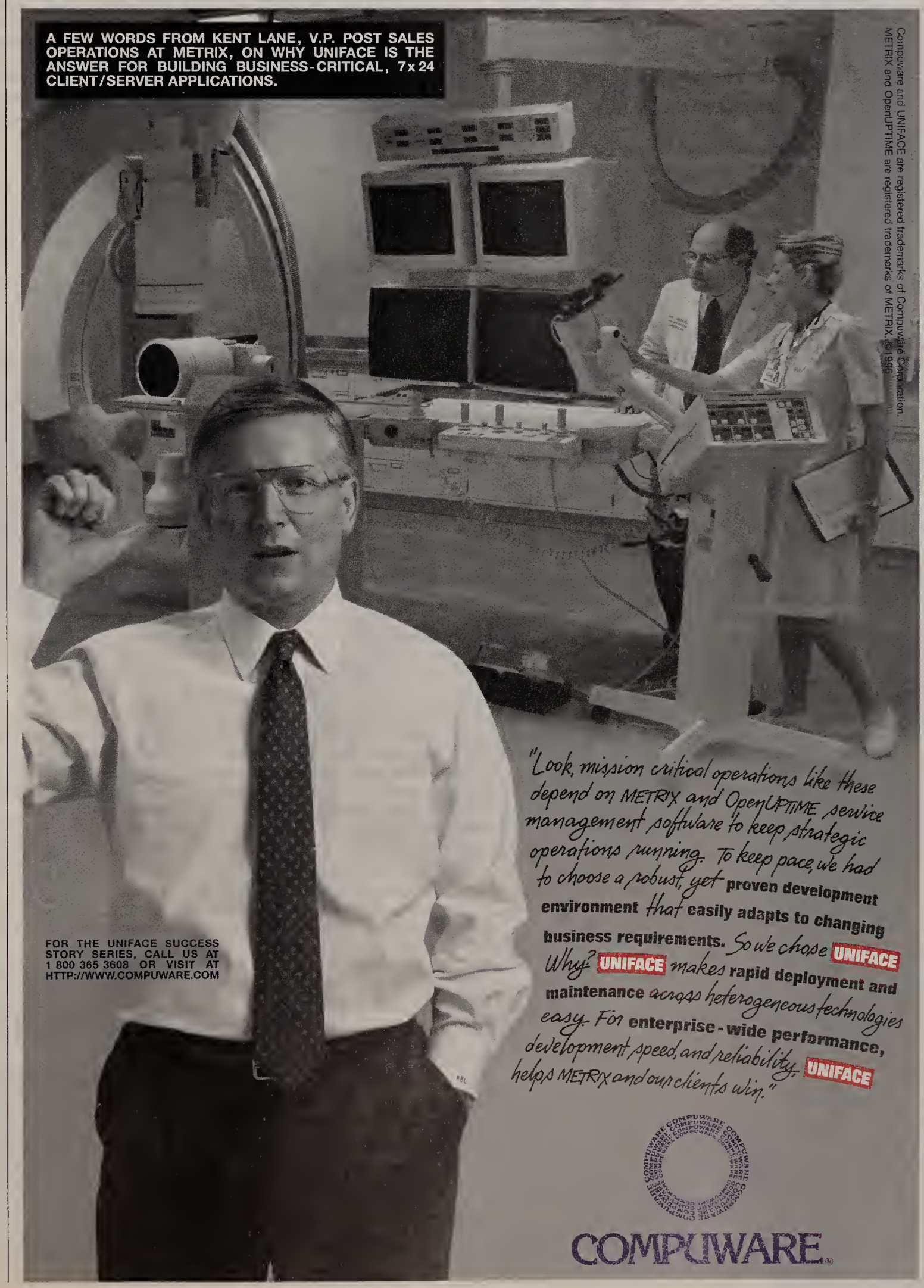
The Sun network computers will run applications only written in Java, Sun's Internet development language. The same applications will also run on any Java-enabled World Wide Web browser.

Sun plans to begin briefing industry analysts on the network computers next week.

Ed Zander, president of Sun's hardware subsidiary, Sun Microsystems Computer Corp., wouldn't comment on details of the announcement. But he said the boxes are aimed at "fixed-function" applications, such as airline reservations terminals, which run one application all day and don't require the flexibility of a PC to run personal productivity applications.

The Sun thin clients initially will be targeted at retail, travel, health care, financial services and telecommunications companies, Zander said.

Along with the network computer, industry observers said Sun plans to display Java-based applications from Eastman Kodak Co., Applix, Inc., NetDynamics, Inc., Home Account Network, Inc. and the Coris subsidiary of R. R. Donnelley & Sons Co. Sun will also offer tools to manage Java-based applications.



Users question Win 95 utility's utility

Beefed-up OS squeezes Norton Utilities 2.0

By Justin Hibbard

Symantec Corp. today shipped Norton Utilities 2.0 for Windows 95, its second stab at providing fix-it tools for an operating system already packed with fix-it tools.

The new Norton offers much that Windows 95 doesn't, such as the ability to take periodic snapshots of file configurations so users can determine when a problem originated.

Utilities

But with so many utilities built in to Windows 95, some users say add-on tools are overkill.

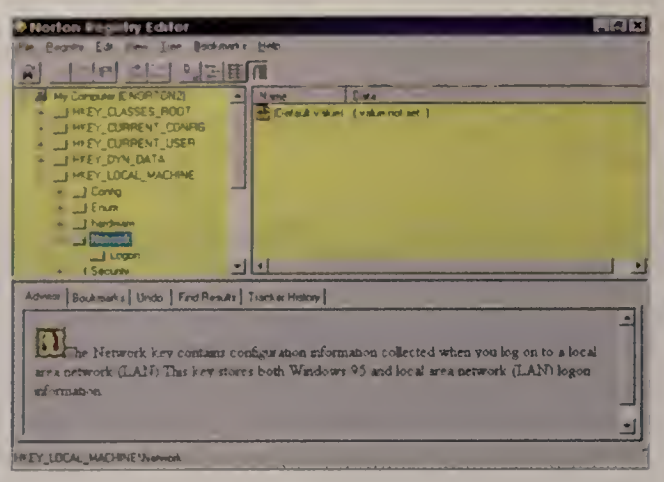
User needs

"Based on my experience with utilities so far, nothing I've tried with Windows 95 is of any value," said Bart Everett, deputy systems editor at *The Los Angeles Times*.

Microsoft Corp. has "really built so much in to the platform that there's very little left to add value to," he said. That is what worries Symantec and other utilities providers.

Symantec targeted the Windows 95 Registry because users complained that the Registry editor built in to the operating system was too rudimentary, said Jeffrey Leeds, senior product manager at Symantec in Cupertino, Calif. The Registry is the hierarchical database that stores information about hardware and software configurations in Windows 95.

"Doing anything with the Registry is a scary process," said Rob Enderle, an analyst at Giga Information Group, Inc. in Santa Clara, Calif. "Having a somewhat intelligent editor can help."



Symantec's Norton Registry Editor *comes with online documentation on modifying the common keys in Windows 95 and creates bookmarks for commonly accessed keys*

The Norton Registry Editor comes with online documentation on how to modify the common keys in Windows 95. It also creates bookmarks for commonly accessed keys and works with the Norton Registry Tracker to show which values a key has had. The editor also will search for and replace orphaned entries — leftover names of deleted application files.

Despite all these features, the Norton editor left Everett unimpressed. "How often do you edit the Registry?" he asked. "You don't do it that often. In this shop anyway, it's just not an issue."

But Bob Beck, owner of Beck & Associates, an IS consultancy in Oklahoma City, said he found the Norton editor useful. "It saved me many hours of work when I installed other programs that caused problems," he said. The other Norton tools also impressed Beck. "Any feature that's in Windows 95, [Norton] does it and does it better," he said.

Chris Le Tocq, an analyst at Dataquest in San Jose, Calif., said Symantec's emphasis on the Registry signals an overall shift among add-on utilities vendors.

"With the change in what [operating systems] provide, the level of what utilities companies have to provide has stepped up," he said. "It's more at the applications level than the file and disk level. I'm expecting to see Symantec do more in that area."

Norton Utilities 2.0 for Windows 95 costs about $79. A trade-up is available for $49.

Hybrids

CONTINUED FROM PAGE 1

world survey of 50 information systems professionals who already run such combination applications. For example, 29% said the systems brought in new revenue; 14% said the hybrids let them cut spending; and staff cuts were reported by 9% of the respondents.

"The first generation of Web sites was just another place to put printed material. This is the next generation: front ends to legacy systems," said David Cordeiro, manager of Internet development at Williams Telecommunications Systems, Inc. in Tulsa, Okla.

Although business value is there for the taking, these applications present tough — but not uncrackable — technology nuts, according to another dozen users interviewed.

IS groups face several sticky issues, including the following:

- Protecting internal data.
- Building applications for users they have never met.
- Deciding whether to let World Wide Web users have real-time access to legacy databases.

Earlier this year, American President Lines (APL), an industrial shipping firm, grappled with whether to provide or prevent real-time access to a Computer Associates International, Inc. CA-IDMS mainframe database.

APL launched a hybrid Web site in June. Part of its goal was to let customers of the Oakland, Calif., company book space on boats and trains to ship large containers. "If we didn't offer real-time data, then [reservation] information [that] customers got could be outdated and wrong," said Diane Silver, vice president of information strategies at APL.

APL spent six months coding an application with the Open Group's Distributed Computing Environment protocols. The custom code passes mainframe data through a secured IBM RS/6000 and a firewall to a Netscape Communications Corp. Web server.

APL built the system for less than $100,000, which is about 25% of what the same program would have cost in a client/server architecture, Silver said.

So far, only 85 customers have signed on. But "we didn't build this for today. We may have some accounts in the next five years that are completely paperless," Silver said.

Mission impossible

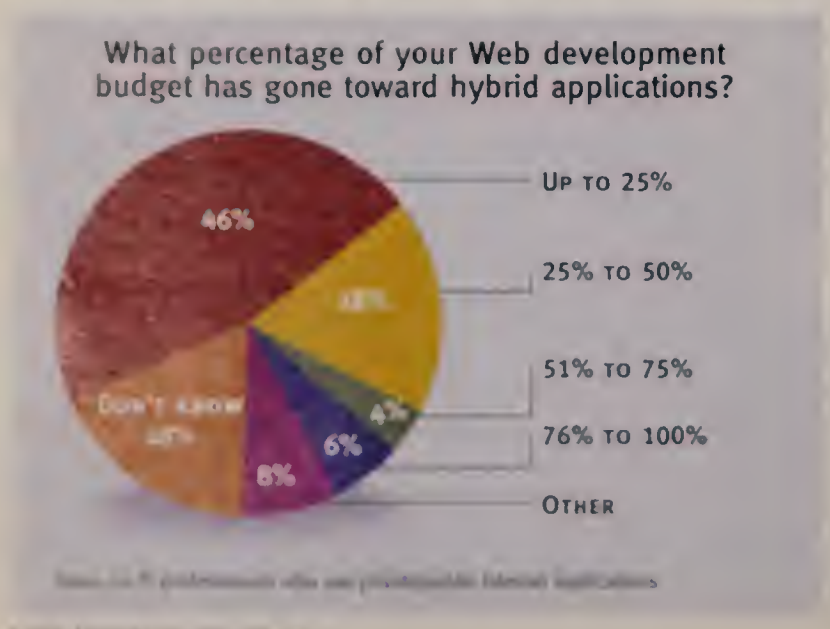
Charles Schwab & Co.'s stock-trading system would have been impossible without real-time Web access to back-end systems.

Regardless of where or how the brokerage buys and sells stock, the application must be real-time and must be linked to the same system used by on-site and telephone brokers, said Gideon Sasson, senior vice president of electronic brokerage technologies at the San Francisco company.

Security was another big concern at Schwab. The company decided to use custom, rather than published, application programming interfaces to connect Netscape Web servers to internal IBM mainframes and RS/6000 Unix boxes. That way, knowledge of standard interfaces won't help a hacker break in, Sasson said.

One of the more challenging parts of building a public/private application is designing applications for mystery users. The applications have to be simple to navigate because "you can't train those users like you can the six people in the department down the hall," Cordeiro said.

An understanding of how people surf the Web will play more of an important role as hybrid applications appear, said Jerry Gross, chief technology officer at Countrywide Home Loans in Pasadena, Calif.



Name your price

Careers

Computer science graduates last year could put webmaster on their resumes and snap up starting salaries of between $50,000 and $75,000 [CW, Oct. 23, 1995]. But today it is a little harder to break in to IS shops that are serious about the Web.

Now it is intranet managers who are in demand. More than simple webmasters, they are people with enterprise computing notches on their belts. They offer experience in database, networking and how IS infrastructures work along with an understanding of Web concepts, said Cheri Comstock, principal at The Focus Group, a recruiting firm in Chapel Hill, N.C.

These intranet managers must go beyond being a "technocrat" and communicate ideas to businesspeople, Comstock said. "They're not teaching that in a lot of computer science programs today."

Workers with those attributes are outstanding finds and making more than $200,000 per year, she said.

But several IS managers said they wouldn't pay that much. "That's an insane amount of money," said Matt Blumberg, a product manager at MovieFone, Inc. in New York.

An IS manager at a Fortune 500 company advised user companies to hire one executive-level person who knows the Internet, then let him recruit Web staff. He said the top salary range at his company is from $100,000 to $110,000 per year, plus bonuses of between 30% and 50%.

So it isn't $200,000, but it's a living. — *Kim S. Nash and Mitch Wagner*

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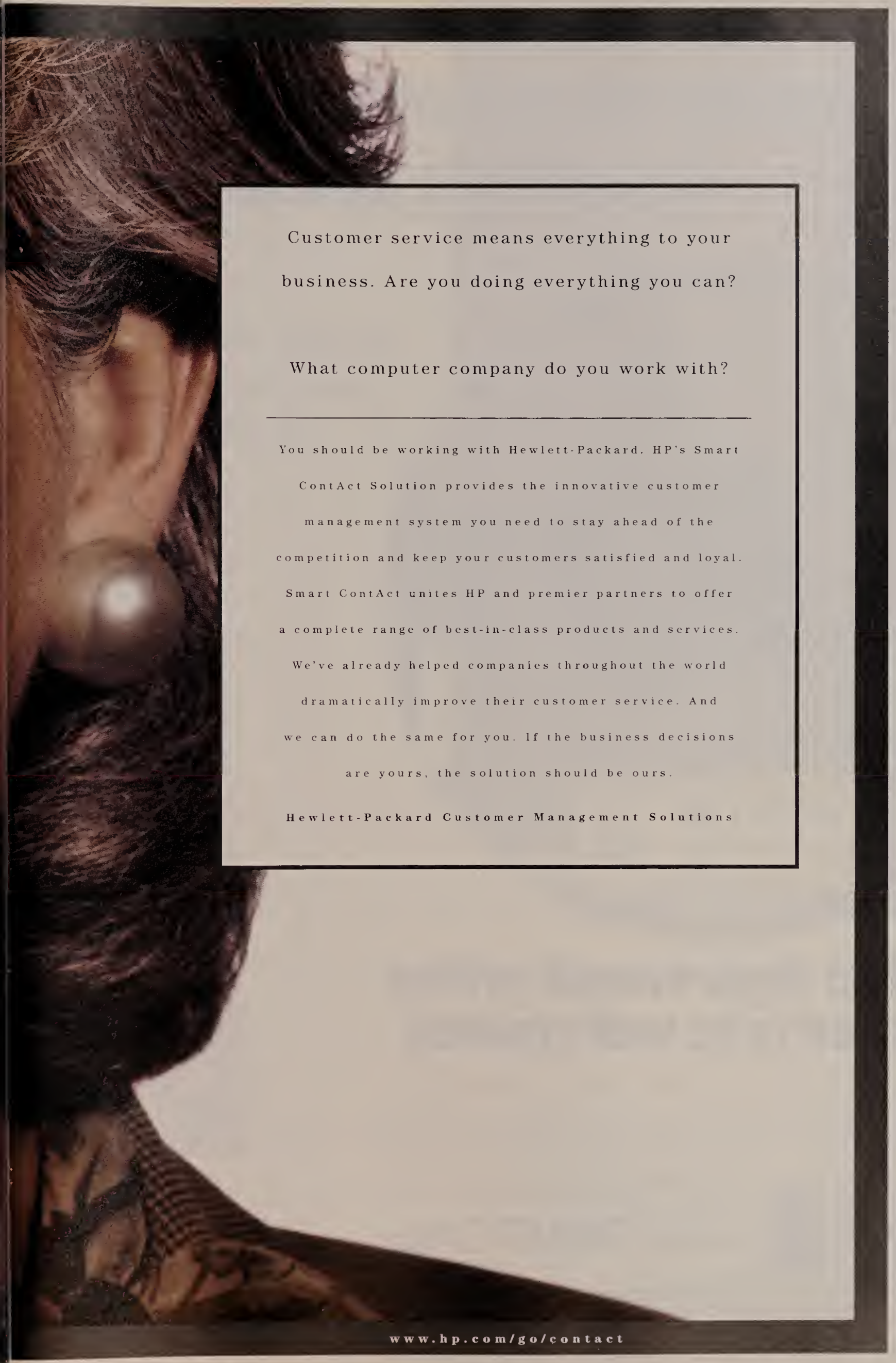

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IS heads home for the workday

By Michael Goldberg

Systems managers at Woolworth Corp. let some computer operators scheduled for a Sunday shift work from home as a reward.

They can monitor batch processes, check systems performance and record problems for the next shift without having to go to the Milwaukee data center.

Like other companies that try to maintain systems while affording IS employees more flexibility, Woolworth's is interested in bringing a bit of the "nomadic" users' experiences to the computer room, said Jack Jansen, computer operations manager at the retailer.

As technology has advanced — and management has become more receptive to the idea — more companies are considering telecommuting for IS staff, said users at last week's Association for Computer Operations Management conference.

"It's not necessary to have staff on-site to get operations done 24 [hours] by 7 [days]. And some of the benefits are more productivity and less stress on the humans doing the work," Jansen said.

Jansen said his firm is taking a cautious approach, studying everything from who buys the PC and desk for telecommuters to the implications of the Americans with Disabilities Act on employees' home offices.

Besides helping employees, these IS managers said the broader use of telecommuting could save money for their companies and society in the long run. For example, the cost of office space could be reduced and air quality could improve with fewer commuters on the road.

Such sweeping benefits aren't here yet, though. And users said companies that are thinking about deploying remote systems operators or help desk attendants also must consider the increased costs of building a networking environment that supports remote users.

Homeward bound

Fannie Mae Corp. in Washington has 38 IS staffers working from home and expects that number to reach 50 by year's end, said Patricia Brizendine, technology control center director at the mortgage agency.

Better data center equipment such as automated tape libraries also opens up opportunities for telecommuters, said Tony Stoker, assistant vice president for information technology at Boatmen's Trust Co.

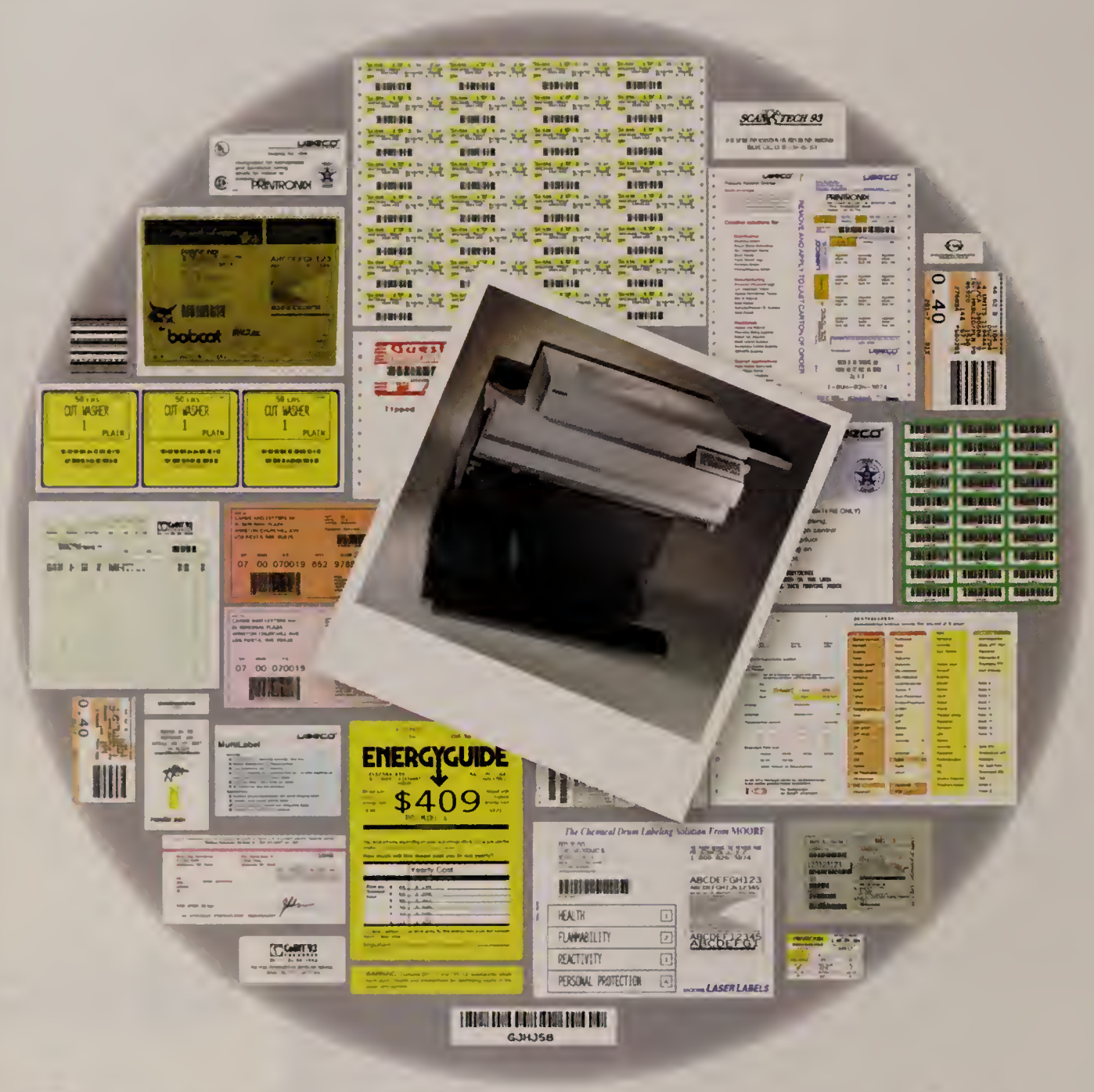
Better quality of life

Stoker said Boatmen's Trust has 25 home workers based near three cities: St. Louis, Kansas City, Mo., and Wichita, Kan. He said the setup hasn't eliminated systems operators working at the bank's data centers. But the configuration has enhanced employees' quality of life and has kept high levels of service at the company.

Placing a different measure of trust on home workers shouldn't be an issue, observers said. "If we can measure what people are doing, we can manage people who work at home. Distance is a function of communication," Stoker said.

Estelle Cephas, automation specialist at Computer Sciences Corp., has been a telecommuter from Newark, Del., since 1990. She said she likes the flexible schedule, but it is difficult to play in the corporate culture of her outsourcing firm.

Cephas said faster modems, better electronic-mail packages and Notes have made her work easier over time. But applications also demand more; the increased throughput demands of some graphical user interfaces require even more networking capacity, she said.



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Novell launches replication software

By Laura DiDio

In a bid to bolster its directory services offerings for the Internet and intranets, Novell, Inc. last week introduced a replication tool that lets administrators distribute files and software updates across the enterprise.

The NetWare Replication Services utility lets businesses distribute Windows documents, Hypertext Markup Language files, software updates, utilities, graphic images and audio and video clips to any servers on the Novell Directory Services (NDS) tree.

That can reduce administrative costs, users and analysts said.

"If I were a network administrator, I'd be anxious to try it because it solves the problem of tracking information across multiple servers," said Neil MacDonald, an analyst at Gartner Group, Inc. in Stamford, Conn.

Andrew Daitch, an information systems analyst at Medical Specialties Distributors, Inc. in Easton, Mass., agreed. "It sounds interesting. As far as I'm concerned, the more functionality Novell puts into NDS, the better," Daitch said.

Medical Specialties has used NDS with NetWare 4.1 for several months. Although the company doesn't currently require advanced replication facilities, that will change, Daitch said.

"We've recently been acquiring small regional companies nationwide, so 12 to 18 months from now, NDS and tools like Replication Services will be pivotal for us to manage thousands of users dispersed around the country," he said.

The time-savings from automatic software updates could conceivably save the firm "hundreds of manpower hours," Daitch said.

But MacDonald and Evie Tse, an engineering analyst at Boston Edison Co., a Boston-based utility, said Novell lags behind other suppliers in delivering some — though not all — replication features.

Boston Edison, for instance, has been using WinInstall from OnDemand Software, Inc. to replicate the data on its application servers for the past two years.

The Replication Services tool runs as a NetWare Loadable Module on any NetWare 4.1, NetWare Web Server or the new Novell IntranetWare server.

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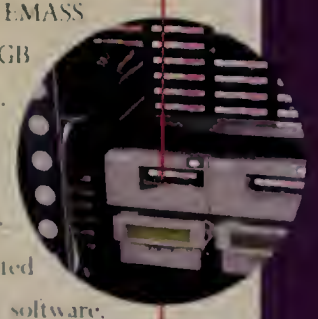

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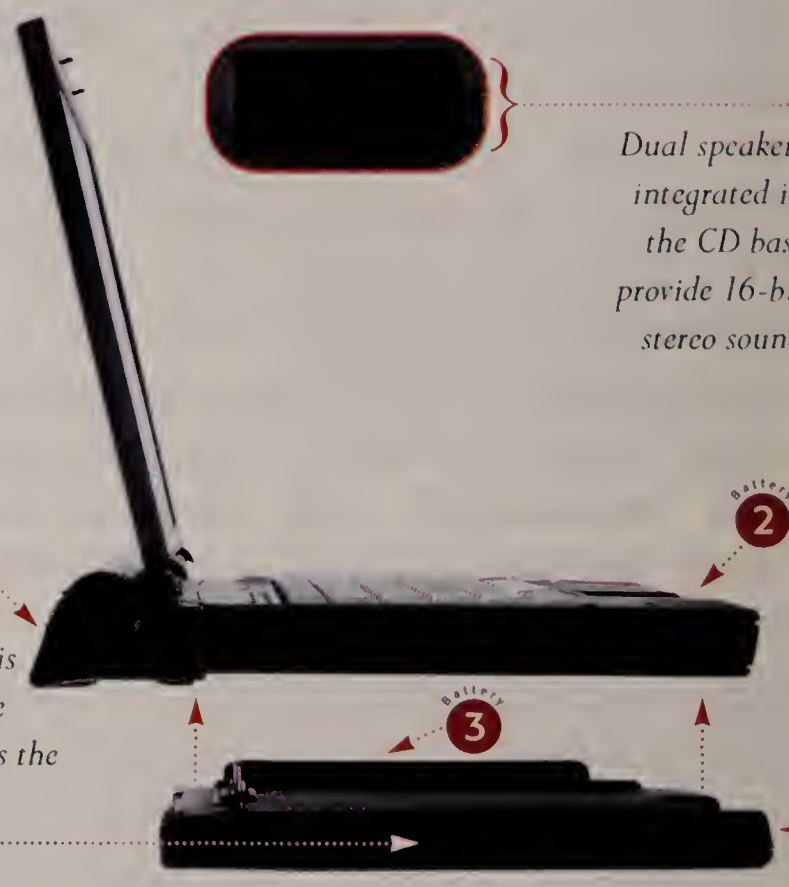

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Has It Changed Your Life Yet?

Online sales pose security concerns

By Mitch Wagner

With the close connections between back-office corporate data and a World Wide Web site, security is a concern for companies that conduct sales online.

Electronic-payment mechanisms, where they exist, are almost universally by credit card and are encrypted using the Internet's Secure Sockets Layer standard. In most cases, a firewall stands between a Web site and a company's internal system. Selected types of data, such as catalog information and orders, pass through that barrier.

Careful storage

Such systems must be configured at company offices. To prevent hackers from breaking into a system and reconfiguring it, configuration can't be done remotely over the Internet.

Sensitive data, such as credit-card information, is often stored in databases that aren't connected to the Internet. That data is kept on the Web site only as the customer is keying it in.

For instance, at the online bookstore Amazon.com, Inc., users who buy books for the first time sign up for a free membership and type in their credit-card numbers at that point. The credit-card numbers are then moved to a database that isn't connected to the Internet, said Shel Kaphan, the company's vice president of research and development.

For subsequent orders, a user must input a membership identification, which gets moved to a separate server — also not connected to the Internet — where the credit-card number is retrieved and examined to ensure that it is still valid. "The only problems we've had are the problems any retail store has — bounced checks and people entering credit-card numbers that are no longer valid," Kaphan said. "There haven't been any attempts to break in."

Express' Les Duncan *says sales from its online store are on target*

Retailers take sales efforts to Web

CONTINUED FROM PAGE 1

any other IS project," Duncan said. "Everything we do has to be tied in to the business and provide business value."

When an Express customer places an order online, custom software translates the data format into the same format used by order-entry and credit-card verification systems at all Express stores. The order is displayed on-screen to an employee, who goes to a back room, gathers the merchandise, boxes it and arranges to ship it.

Express is pleased with the progress of its online store in its first three months of operation, Duncan said. The company won't share figures about sales volume, but Duncan said sales are on target.

Foreign sales

And about 20% of those sales come from abroad, which was one of Express' goals. The chain has outlets only in the continental U.S. and had hoped the online store would give the company an international presence.

Like Express, Continental Airlines, Inc. has succeeded in its online effort because of good connections to back-end systems. Those links allow a sales site on the World Wide Web to take advantage of existing corporate inventory, order-entry and payment systems, said Eugene Higley, manager of online services at Continental.

"If you can run through your back-office setup, you can take advantage of the systems you've already created," Higley explained. Continental plans to launch ticket sales on the Web at www.flycontinental.com in October.

The airline has a leg up on other sales sites on the Web because it has access to AMR Corp.'s Sabre system, an interactive system for selling tickets.

Continental built hooks from the Web to the Sabre system to sell its own tickets, and the Sabre system in turn connects with Continental's legacy data.

Lands' End, Inc. has a similar story. Soon after the clothier started offering online sales a year ago, it built hooks from its Web site to the IBM DB2-based mainframe systems used to process telephone orders from its paper catalog.

War of the worlds: IS meets the Internet

One of the first tasks a firm contemplating online sales must face is to decide who does the job. In many cases, the information systems department is bypassed when it comes to building and running the site; consultants and outsourcers are usually brought in instead.

Often, it is a case of IS being already overextended simply with building and running the company's back-end systems. Companies are reluctant to commit IS resources to what might prove to be a short-lived experiment.

"This is a start-up venture. We really don't know whether it will be something that will kick off great guns or be mediocre or bad," said Les Duncan, chief information officer at Express in Columbus, Ohio.

Express is having IBM build its World Wide Web site.

Often, IS departments' working styles aren't suited to the Internet world. IS departments are procedure-oriented, methodical and take the long view. Web sites require quick, intuitive decisions.

"IS departments on the whole still have the mainframe mentality," said Eugene Higley, manager of online services at Continental Airlines in Houston. "The Internet requires more of a notebook-computer mentality. You have to mesh the two, and that's not always easy."

Continental used its systems integrator, Electronic Data Systems Corp., to build its Web site.

But outsourcing a Web project has its drawbacks.

Amex's site *offers everything from bookings to financial advice*

It can make it more difficult to integrate the site with a company's business practices and back-end systems. That's why American Express Co. has an interactive services group within IS, which acts as a consulting group to help other Amex units set up their own online projects.

Amex (www.americanexpress.com) so far has gone online with sites that offer travel bookings and sales from catalogs, in addition to credit-card applications, inquiries and financial advice. "We think we can provide both better service and better security for what we accomplish when we do it ourselves," said Dave Bauman, senior vice president of interactive services at Amex.

In many cases, a project that began as an outsourced job ends up seeing more in-house IS involvement.

That was the case at Lands' End. The Dodgeville, Wis., clothier's Web site started as a collaboration between the marketing department and consultants from Evergreen Internet, Inc. in Chandler, Ariz. Later, the firm realized it would have to bring its own IS department into the act to connect effectively to the existing IS infrastructure. "We need to maintain tighter control over what goes on with the Web applications as they become more tightly integrated with host legacy systems," said webmaster Randy Lagman. — *Mitch Wagner*

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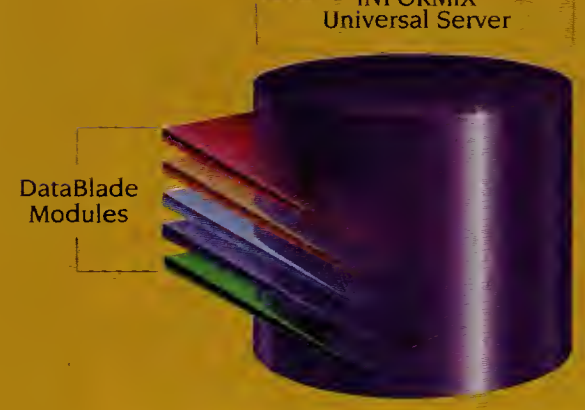

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Computer Industry

Spyglass bets on 'net devices

Original browser maker may live or die with thin clients

By Kim S. Nash
NAPERVILLE, ILL.

Plenty of companies care whether the fabled Internet device idea spins gold, but none more so than Spyglass, Inc.

The company that beat Netscape Communications Corp. to market with a World Wide Web browser by several months — and Microsoft Corp. by almost two years — is pitching a business plan that relies heavily on whether thin-client 'net contraptions live or die.

"To say that we're interested in whether the idea of non-PC Internet devices pans out is putting it mildly," said Tim Krauskopf, co-founder and vice president of research and development.

Spyglass' Tim Krauskopf *wants to supply non-PC users who access the Web*

Almost as soon as Spyglass shipped its Spyglass Mosaic browser in the spring of 1994, company founders regrouped to find a way to avoid getting trampled by the Web riot they foresaw. Instead of selling to only user companies, Spyglass started to peddle browser and server products to software makers to embed in their systems. Indeed, Microsoft licensed Spyglass' browser as a core for its Internet Explorer.

Early this year, Spyglass split its browser and server products into pieces that users can mix and match to build Web software with only the features they want.

For example, customers such as QNX Software Systems Ltd. and Bandai Digital Entertainment Corp. have bought the kits to build Web interfaces for TVs, personal digital assistants and other appliances.

The idea is that as people come up with more uses for the Web, they will want to access it from machines other than PCs, Krauskopf said. Spyglass wants to be the supplier of Web software to make those machines fly.

So far, the plan appears to be working. Spyglass is expected to report its 11th consecutive profitable quarter this month. At least 50 new licensees have signed up to build off Spyglass technology, more than doubling a lineup of 45 a year ago.

"They spend time talking to these folks [device makers], and they know what they want. I don't know of too many Internet companies other than Spyglass that do," said Mark D'Annalfo, an analyst at Adams, Harkness and Hill, a brokerage firm in Boston.

Let's make a deal

Spyglass has yet to make deals with perhaps the biggest boosters of these network devices: the team of IBM, Oracle Corp. and Sun Microsystems, Inc.

But the company isn't counting solely on Internet devices.

Spyglass has also won some deals among end-user companies that want to conduct business on the Web.

Wells Fargo Bank in San Francisco, for example, built a custom browser from Spyglass parts. The browser, which has no brand name on it other than the bank's, is used by small businesses that do online banking with Wells Fargo.

A group at Ohio State University used Spyglass kits to build a $15 CD-ROM that it markets to math and science teachers throughout the U.S.

Spyglass is counting on this strategy to let customers choose only the browser or server features they need as a way to end-run Netscape and Microsoft, whose products grow bigger with each new release every three to six months.

Spyglass
Naperville, Ill.
www.spyglass.com

- Initial public offering: **June 27, 1995**
- Number of licensees in November 1995: **45**
- Number of licensees in October 1996: **100+**
- Number of companies acquired in 1996: **3**
- Fiscal 1995 sales: **$10.4M**
- Fiscal 1996 sales: **$15M***
- Fiscal 1995 profits: **$2.2M**
- Fiscal 1996 profits: **$5M***

*Projected

Feds ease crypto rules, but with a 'key' catch

By Gary H. Anthes

The White House last week eased controls on the export of data encryption products, but critics said the new rules don't go far enough.

The Clinton administration said it will allow the export of software with 56-bit encryption keys, which are 65,000 times harder to crack than the 40-bit keys now permitted.

"This initiative will make it easier for Americans to use stronger encryption products — whether at home or abroad," said Vice President Al Gore.

As with earlier policies, however, the export relaxation comes with a catch. Software vendors exporting 56-bit encryption products must present a plan to develop within two years a "key recovery" feature. That will allow law enforcers to obtain the encryption keys in order to carry out court-approved wiretaps or seizures of digital materials.

After a two-year grace period, export doors will close again on any 56-bit products that haven't implemented a key-recovery feature. Products with key recovery could be exported with any key length.

Robert Holleyman, president of the Business Software Alliance in Washington, called the White House plan "forward progress." But even 56-bit cryptography isn't strong enough for Internet financial applications, he said.

The Computer Systems Policy Project in Washington, a coalition of CEOs from 12 major computer companies, was generally pleased with the policy statement.

Under the latest White House proposals, encryption keys would be held by trusted third parties or, under government guidelines, user organizations.

Some companies have said they want a way to recover keys if it is necessary to unscramble important data left by a deceased, departed or unethical employee. "A key-recovery scheme is absolutely essential, particularly for major businesses," said Dorothy E. Denning, a cryptography expert and computer science professor at Georgetown University in Washington.

Separately, IBM last week announced the formation of an industry alliance to develop a key-recovery method.

Try, try, again

This is the White House's third attempt to win industry approval. But satisfying the concerns of exporters and privacy rights advocates seems to be a moving target.

"This debate is not over by any stretch of the imagination," said Sen. Conrad Burns (R-Mont.). He said he would move forward with legislation that would allow the unrestricted export of cryptographic products if products with comparable security are available from foreign suppliers.

White House loosens export controls on cryptography

Evolution of Clinton administration encryption policy proposals Restriction	Clipper proposal February 1994	Key recovery proposal October 1996
Hardware implementations only	●	
Algorithms are secret	●	
Maximum key lengths	●	
Keys held by U.S. government	●	
Keys held by corporate users under guidelines		●
Keys support users' need for data recovery		●
Keys available to law enforcement	●	●
Exported strong crypto requires key recovery	●	●
Limits on domestic use of cryptography		

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- 65. Communications Systems/Public Utilities/Transportation
- 70. Mining/Construction/Petroleum/ Refining/Agriculture
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- 23. Dir./Mgr. Sys. Development, Systems Architecture
- 31. Programming Management, Software Developers
- 41. Engineering, Scientific, R&D, Tech. Management
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- (b) Netware
- (c) OS/2
- (d) Unix
- (e) Mac OS
- (f) Windows NT
- (g) Windows
- (h) NeXTstep

App. Development Products ❒ Yes ❒ No

Networking Products ❒ Yes ❒ No

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E. 500 – 999	❒	❒
F. 100 – 499	❒	❒
G. 50 – 99	❒	❒
H. 20 – 49	❒	❒
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31. Programming Management, Software Developers
41. Engineering, Scientific, R&D, Tech. Management
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51. Sales & Mktg. Management
70. Medical, Legal, Accounting Mgt.
OTHER PROFESSIONAL MANAGEMENT
80. Information Centers/Libraries, Educators, Journalists, Students
90. Other Titled Personnel

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Operating Systems
(a) Solaris (e) Mac OS
(b) Netware (f) Windows NT
(c) OS/2 (g) Windows
(d) Unix (h) NeXTstep
App. Development Products ❒ Yes ❒ No
Networking Products ❒ Yes ❒ No

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Opinion

Inter-notyet

So I called my Aunt Lucy in Brooklyn, N.Y., to tell her that I'm joining the team that puts out *Computerworld*'s Web page.

"What?" she said. "You're doing something with extermination?"

Despite my best efforts to explain, she now thinks I'm running around dressed up in a Spiderwoman outfit, toting a PC. Which actually wouldn't be bad work if you could get it.

My aunt isn't alone in her confusion. The industry itself is pretty muddled about this whole Internet thing. Some gurus predict that we'll all be doing heavy-duty business on the 'net in the next year or two.

But customers are still wrestling with major infrastructure issues such as upgrading their end users' desktop machines to handle the Web's multimedia and improving their telecommunications infrastructures to take care of the additional demands the Internet will bring. Not to mention trying to figure out standards and security issues.

Of the three big user organizations I've visited recently, none of them are doing anything even close to mission-critical on the 'net. When asked, the information systems managers scratched their heads and allowed as how, yes, they're doing something about putting the company telephone books up on an intranet. But they said they can't really devote too many resources to the Web because they have a massive system conversion or some other big project going on.

My prediction: Doing business on the 'net for most of us mere mortals is three to five years away. And when it comes, it's going to be like the "Year of the LAN." Remember that? That was when a majority of companies were going to install LANs, and it was predicted to happen just about every year from 1982 onward. Well, by around 1989, most companies had finally done so.

The Internet will unfold that way. As companies solve their internal issues, they will figure out what works for them and only then will they will make widespread net usage happen.

Maybe by then, someone will have figured out a way for me to explain my job to Aunt Lucy.

Juliana Ambrosio

Juliana Ambrosio, *Online editor*
Internet: [illegible]

Letters to the editor

Air traffic safety issues start with FAA

I'd like to add some perspective to this "safety" issue ["Ancient systems put scare in air," CW, Aug. 5]. I am a pilot, and I would say the skies are very safe. But the Federal Aviation Administration air traffic system contributes little to this. Your article is too focused on the computer hardware issue without looking at the big view.

If you look at accidents over many years, the causes are consistent. On any list of accident causes, the least likely is a midair collision. That is the only cause addressed by the air-traffic system. Weather, pilot error and criminal acts rank far higher. In fact, the only traffic problems I have had in 35 years of flying [occurred] when the system was working.

As I see it, the problem with the current system isn't that it is old, but it is based on the wrong information theory and technology. Basically, controllers use radar to find the location of aircraft and use simplex radio to relay navigation instructions to the pilot, who then takes action. This is backward. Global Positioning System (GPS) navigation sets are far more accurate than radar. Let's have an aircraft find its own position and then automatically report that position to all concerned. Flight crews, once they are aware of another aircraft, find it very easy to avoid it.

I ask you as an IS professional to take a few minutes and think about how you would design a computer system to deal with air traffic. Think about the GPS, which gives a highly accurate three-dimensional position. Think about real-time information flow to those who need it most. Think about virtual-reality display technology, which would let a pilot look through the worst weather to see airports and other aircraft. What about real-time weather displays on the flight deck? NASA is working on all this, but the FAA seems ignorant.

Bill Daniels
Littleton, Colo.

I want to thank you for your fine stories on the incredible situation of the FAA. I imagine few Americans are aware of the ridiculously outmoded equipment they are trusting their lives to every time they take to the air.

Oddly enough, I was first introduced to the FAA situation in the spring of 1995, when the Fox TV network aired an episode of its series *VR.5* that dealt with an air traffic controller who held a Los Angeles area air traffic control center hostage. In the episode, the controller demonstrated the antiquated nature of the equipment at some length, showing that vacuum tubes were still used in some of the devices. My first reaction was that this was just TV and that it couldn't be as bad as was depicted. Your articles have put a stamp of authenticity on what I saw, and I am now truly appalled.

Hopefully your articles will be the beginning of some larger attention by the mass media. The disasters of the past months have once again raised the question of the safety of air travel; the time is right for more attention to be focused on the FAA.

Rob Woodard
Dallas
rwoodard@cyberramp.net

Object benefits

It's unfortunate that publications such as *Computerworld* are unable to articulate the benefits that object-oriented technology and the Internet hold for helping large corporations manage their complex, rapidly changing environments.

Major corporations are moving to a three-tier model that enables them to build transaction-oriented applications with objects and leverage their investment in relational database technology. This middle tier is both an object server — able to execute application logic — and an object repository that can manage large numbers of objects.

This architecture, fueled by the emergence of standards such as Common Object Request Broker Architecture and the Internet, is destined to become the dominant client/server technology.

Brian Edwards
Director, corporate marketing
GemStone Systems, Inc.
Beaverton, Ore.

■ Computerworld welcomes comments from its readers. Letters shouldn't exceed 200 words and should be addressed to Maryfran Johnson, Executive Editor, Computerworld, PO Box 9171, 500 Old Connecticut Path, Framingham, Mass. 01701. Fax number: (508) 875-8931; Internet: letters@cw.com. Please include an address and phone number for verification.

Verbatim

FROM A REPORT BY JON OLTSIK, AN ANALYST AT FORRESTER RESEARCH, INC. IN CAMBRIDGE, MASS.:

Large corporations no longer consider Novell, Inc. a strategic vendor and believe NetWare is a legacy operating system. Users are very dissatisfied with Novell.

[Microsoft Corp.'s Windows NT] seems like a better strategic solution — it can do file and print, run applications and includes native support for TCP/IP. And so far, Novell's marketing message — that NetWare will seamlessly transition into the intranet — has fallen on deaf ears. [Information systems] managers are already building the intranet with Netscape, Microsoft or Lotus [products]. Novell is not even on the radar screen.

Intranet technologies will ultimately replace NetWare. In the meantime . . . [users] should not panic and rip out NetWare. Making this move would cost a mint and deliver no return. The right thing to do is spend tactically on file and print for the next two years and begin to implement intranet protocols and products as they mature.

FROM A REPORT BY JAMES B. MOORE, PRESIDENT OF MENTIS CORP. IN DURHAM, N.C.:

The [bank] branch is not obsolete. More than 3,000 new branches will be added in 1996. Despite the proliferation of alternate retail delivery initiatives [such as online banking], the branch remains an important point of contact for a large number of customers. In fact, 60% of a bank's income is derived from the 40% of customers who are exclusive users of the traditional branch.

[In the future,] as consumer transactions are transferred from traditional branches to electronic alternatives, the number of branches will eventually decline. However, the branch's evolving role as a sales and service center may offset major closings of offices.

Education and training aren't the same

Efrem G. Mallach

Colleges should be teaching universal IS principles, not how to install NetWare or tune Oracle.

Pundits — and even some IS managers — say colleges and universities are failing to turn out people trained in NetWare, Windows 95 and NT, and so on.

They're right. They're also missing the point. Focusing on the hot product of the hour isn't what colleges ought to be doing.

There's a difference between education and training. Training teaches students to deal with something they will encounter. Education prepares them to deal with anything they might encounter. The role of college and university degree programs is education. Teaching how to install today's release of NetWare is training.

What should colleges teach? They should teach students to work and live during technological change. They should teach concepts and skills to approach problems wisely. They should teach, for instance, what database normalization is, why one does it and why performance may force one to undo it. They shouldn't teach how to tune Oracle, beyond using it as an example. They must be crystal clear about the difference between the principle and how a particular database supports it — which differs from Oracle to Sybase and will change in the next release.

This doesn't mean teaching the "same old stuff." Curricula must evolve. Colleges should teach client/server, data warehousing and intranets. Using Delphi to develop client/server systems via a graphical, fourth-generation language will stand students in good stead in 20 years. Preparing for a hiring quiz on Delphi syntax, menus and dialog boxes won't.

Many information systems managers like job-oriented programs. Were I still a manager, I too might go for the "quick hit" — a trained person who can fix concrete problems right now. So what if he or she hits a professional dead end in a decade? Not my problem.

Thus, we find IS managers pressing for Certified NetWare Engineer and other training programs. Advisory boards repeat the mantra. Students — because normal 20-year-olds care more about jobs at 22 than about careers at 42 — take up the refrain. Companies such as Novell and Microsoft, with multimillion-dollar budgets for selective support of higher education, put their formidable resources behind it. Professors who stand to benefit from these resources find it tempting to go along. Deans and provosts, hearing the clamor and not fully understanding the issues, urge that schools "meet industry needs."

Faculty members have a professional obligation to disagree. They should prepare students for 40-year careers during which technology will change a dozen times — not for their first jobs at the expense of the long term. A young person who wants a ticket to a first job should be able to find one. But colleges are under no obligation to devalue the bachelor's degree by attaching it to that training — or to dignify the training by awarding a degree for it.

The pundits and I aren't that far apart. Any IS curriculum must combine principles and products. I want my graduates to be able to find jobs. (They do.) The pundits, I assume, want graduates who can learn and grow. Our ideal programs probably wouldn't differ in more than a few courses. Graduates need the skills to get their first job. But the capability to keep learning, to succeed in all those jobs they'll have from their first to their last, is more important.

Mallach is chairman of the Manufacturing and MIS Department at the University of Massachusetts, Lowell. He is also CEO of Kensington Group, Inc., an industry consultancy on analyst and consultant relations. His Internet address is mallache@woods.uml.edu.

Web site design: Is it art or science?

John Gantz

There won't be enough Web site designers to go around, so start stealing great ideas from your peers.

The number of public pages on the World Wide Web is 66 million and will grow to 1.1 billion by the end of 2000, according to our latest forecast. In other words, we're right in the middle of designing a lot of stuff and putting it on the Web.

Do we even have a clue about what we're doing? I doubt it. I'm convinced that most corporate Web adventurers are heading into a black hole when it comes to Web site design.

Unlike bridges, computer chips or airplanes, Web sites are created with no common design principles, no certification of professionals, no graduate schools on the subject and no professional association dedicated to improving the practice. What works for corporate brochures or catalogs won't necessarily work for Web pages. What works for database lookup won't necessarily work for Web transactions. Layout rules for magazines and newsletters go by the wayside when you put those publications online.

We have learned a few things from early experience. For example, don't overload a Web page with graphics that slow down transmission, and don't count on every browser being able to read JavaScript.

But there is a ton more that we don't know, which spells trouble as corporate Web sites become more complex and bulk up to thousands of pages. Serious Web commerce sites offer an average of 36 categories to browse, with eight levels of depth and 70,000 stock numbers for things you can order. Think about what that means in terms of the opportunities for a Web visitor to get lost or otherwise have a bad experience.

There are a handful of creative ad agencies that specialize in Web site design — such as CKS Group, Digital Planet and Razorfish — but they won't be much help designing intranets or non-marketing Web sites.

And each design firm has a different set of design tools and philosophy. Some see Web design as a creative activity; they focus most on look and feel. Others see it as a construction activity; they focus on navigation, performance and administration. I'm not sure the two ever meet.

Developing a better-than-average Web site requires an oddball mix of skills — graphic arts and Java programming, for instance — and people with those skills don't grow on trees. The ones who have those skills want to work for hot start-ups with career paths and stock options, not for some Rust Belt company that only needs one or two designers to keep its Web site fresh.

Yes, start-up companies are emerging with products to help solve design issues and provide templates. But that billion-page forecast suggests the need for good Web site design skills will outpace the supply. There will be a lot of ugly, unnavigable, awkward Web sites and intranets.

If you don't want to outsource all your Web site development to pony-tailed artists who will make three times what you do, now is the time to start boning up on Web site design tools, visiting slick sites and learning from experienced peers. The next two years will be rife with experimentation in Web site design. Smart IS professionals will be monitoring those experiments closely — and stealing the ideas that work.

Gantz is senior vice president at International Data Corp. in Framingham, Mass. His Internet address is jgantz@idcresearch.com.

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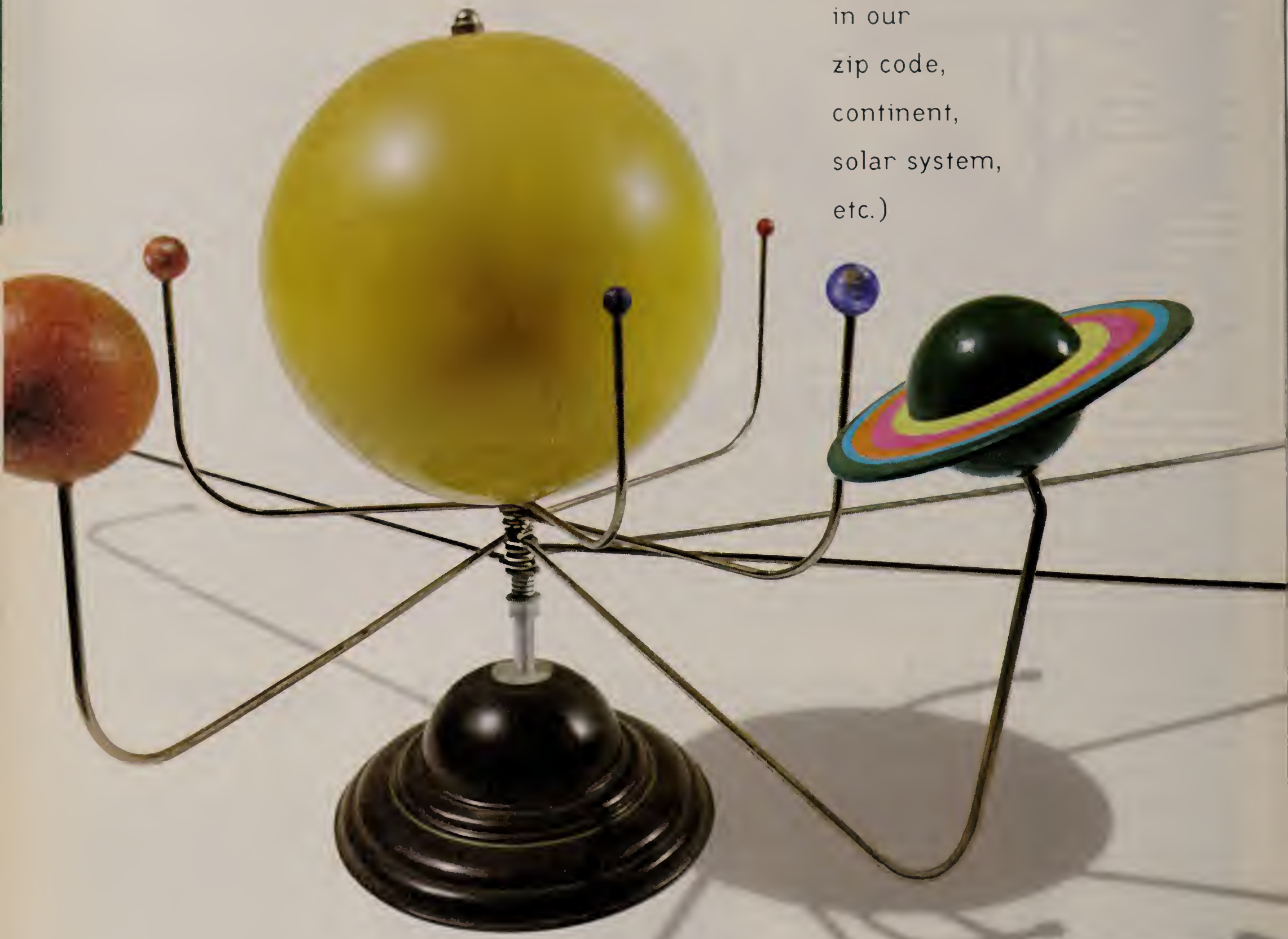

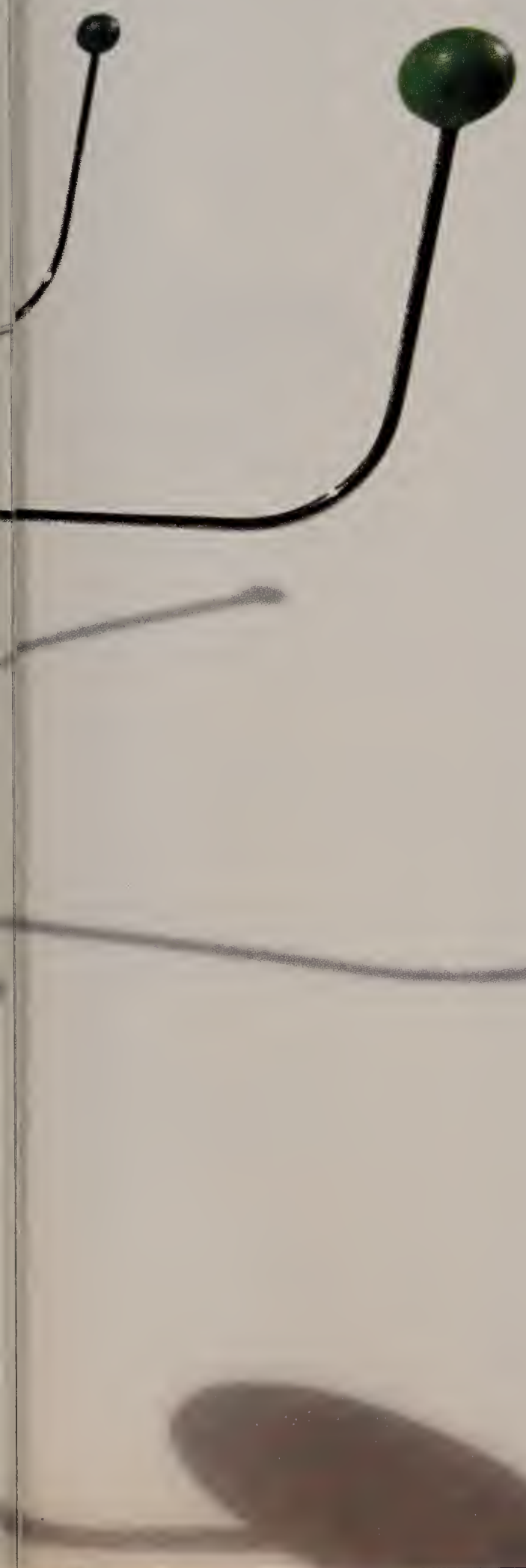

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1. first multimedia conferencing system that brings together people on different communications devices (e.g., groups on workstations in N.Y. and L.A. can meet with a lucky dog on a cell phone in Aspen). Named Multimedia Communications eXchange or MMCX, for short.

1. first software that creates "universal mailbox" using customers' existing servers. Makes e-mail, voice mail, faxes available from any phone or desktop pc. (Letters from Mom still come old-fashioned way.) Ask for INTUITY™ AUDIX Integrated Messaging.

1. first videoconferencing system with continuous presence, switching among up to 24 sites. (Nearly five times more than other guys' system.) Four sites on screen simultaneously. Named Multipoint Conferencing Unit.

More good ideas where those came from (Bell Labs). Call former Business Communications Systems division of AT&T. Now Lucent Technologies.

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Does IS really want competition?

It is taken as gospel that competitive markets are best for the consumer. So how do we explain the fact that the industry's biggest, most knowledgeable buyers often elect monopoly leaders? Why do information systems customers sometimes choose to minimize competition?

This isn't just an academic question. As shown by products as diverse as IBM's MVS, Novell's NetWare, Microsoft's DOS, Windows, Word and Excel and most recently Netscape's Navigator and Microsoft's Windows NT, individual customer choices often result in overwhelmingly strong software market leaders.

In hardware, where products such as PCs, disk drives, printers and modems are truly compatible, fierce supplier competition is the norm. In contrast, software products are rarely interoperable and often require tough architectural decisions. Understandably, customers fear making the wrong choice and find safety in numbers. But those emotions quickly become self-reinforcing and create powerful herd effects.

Until recently, different vendors — IBM, Microsoft, Novell and Lotus — dominated different software sectors, so this winner-take-all dynamic wasn't a major concern. But now that one vendor, Microsoft, is poised to control so many interrelated segments, the herd instinct and the future of software industry competition are on a collision course.

Of course, one could argue that having a single software giant is merely the logical extension of customers' follow-the-leader preferences. If two products are even roughly comparable, choosing Microsoft is

David Moschella

Software buyers will follow the leader, but that leads to monopolies

the easiest way for many IS managers to pursue their perfectly rational desire for safety and simplicity.

But having lived through the IBM era, many users know that one vendor's control over so many key software segments will eventually lead to higher prices and reduced innovation. Hence the dilemma: Perfectly rational, short-term customer decisions aren't likely to produce an optimal long-term outcome. What to do?

Microsoft's competitors must make the herd instinct work in their favor. They must convince customers that they offer an equally clear and safe path to the future. So far, they haven't. The necessary cooperation, alliances and mergers either haven't happened or haven't been effective.

Government intervention can help but offers only a partial solution. Antitrust overseers must balance any efforts to assure open competition with a healthy respect for the expressed needs of the consumer. If government decisions or jawboning can restrain Microsoft's most predatory tactics, Washington will have done its job.

What will customers decide? As the database management market shows, software monopolies aren't inevitable. In the end, if customers want dominant leaders, they will have them. The key question isn't just "Where do you want to go today?" but "Where do you want to be tomorrow?"

Moschella is senior vice president of research at Computerworld, Inc. in Framingham, Mass.

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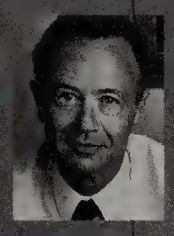

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CD technologies take a turn toward workgroup level, **49**

OS may goose PDA market

Microsoft's Windows CE operating system boasts synchronization, lacks connectivity

By Mindy Blodgett

When Microsoft Corp. entered the personal digital assistant (PDA) market with its Windows CE operating system recently, the move was heralded as just the stimulus needed to jump-start a slow-moving industry.

Several hardware vendors quickly announced they would manufacture Windows CE-based devices. They included Hewlett-Packard Co., NEC Computer Systems, Inc., Casio Computer Products Ltd., Philips Consumer Electronics, Inc. and LG Electronics USA, Inc.

Handheld computers

But does the software giant's interest mean that users will begin flocking to the PDA market?

Most industry pundits said the market should improve — if only because the Windows CE devices will have the Windows graphical user interface (GUI) so familiar to users.

"One of the complaints about handhelds and PDAs is the difficulty of learning a new system or getting used to handwriting recognition," said Philip Redman, an analyst at The Yankee Group in Boston. "So Microsoft's entrance is not a small thing."

New devices — expected to cost about $500 — won't be announced until Comdex/Fall '96 in November. Microsoft officials said the operating system will provide wireless access to electronic mail and the Internet, data synchronization and communication with other Windows 95 and Windows NT devices.

With data synchronization, users are able to transfer updated data among the PDAs and other devices such as desktops and printers.

A few flaws

Andrew Seybold, an analyst and editor of "Outlook on Communication and Computing," a newsletter in Boulder Creek, Calif., said the Windows CE operating system will give users "slam-dunk data synchronization" with Windows-based devices.

Windows for PDAs

Microsoft's Windows CE operating system for PDAs includes the following features:

- 4M bytes of memory required
- Windows 95 GUI
- Wireless E-mail capabilities
- Internet access and data synchronization with other Windows 95 and Windows NT devices

But analysts said Windows CE, the successor to Microsoft's WinPad PDA project — which never got off the ground — still has some holes.

Diana Hwang, an analyst at International Data Corp. in Framingham, Mass., said Microsoft needs to focus more on the applications offered by the operating system.

"Otherwise, without more connectivity features, people might decide they are better off with laptops," Hwang said. "It will only be appealing in vertical markets."

Users said they are interested in PDAs that offer sophisticated features.

David Steinberg, legal division manager at Du Pont Merck Pharmaceutical Co. in Wilmington, Del., said about 30 lawyers at the company use handheld computers from Psion, Inc. as substitutes for laptops. The Psion Series 3A handheld computer gives the drug company's attorneys access to E-mail and data synchronization with the division's Macintosh computers, Steinberg said.

"Laptops are just too heavy, and the handhelds give us everything we need," he said.

Psion recently announced two PDAs, the Series 3C and the Siena, both of which will allow infrared connectivity.

The Series 3C has 2M bytes of memory and backlit screens. The devices range in price from $249 to $599. And Apple Computer, Inc. plans to announce enhancements to the Newton in the coming weeks.

WorldMark 4300 allows for greater scalability

By Jaikumar Vijayan

NCR Corp. has added a midrange symmetrical multiprocessor Windows NT server to its WorldMark line of servers.

The WorldMark 4300 is based on NCR's recently announced Octascale upgrade technology and supports up to eight Intel Corp. Pentium Pro chips.

Octascale will let users convert quad-processor Pentium Pro systems to eight-processor servers simply by adding a processor board to an existing system.

Such extended scalability will let corporations increase the power of their servers with their application needs, rather than have to buy new machines, observers said. Previously, the only way to build eight-processor Pentium Pro Windows NT systems was to

WorldMark, *page 49*

NCR WorldMark 4300

PROCESSOR	166- or 200-MHz Pentium Pro
CPUs SUPPORTED	Up to eight
MEMORY	Up to 8G bytes
INTERNAL STORAGE	Up to 48G bytes
SLOTS	Six PCI and EISA
EXTRAS	Redundant fans and hot-plug power supplies

Sun pumps up Netra servers

By Jaikumar Vijayan

Sun Microsystems, Inc. is adding muscle to its Internet server lineup.

The Mountain View, Calif., company last week announced three symmetrical multiprocessing versions of the Netra Internet server family based on its 64-bit UltraSPARC chips.

Features included

Netra Internet Server 4000 and 5000 come bundled with Netscape Communications Corp.'s SuiteSpot World Wide Web server software and are capable of supporting up to 14 UltraSPARC chips, 14G bytes of memory, redundant power, cooling and I/O modules (see chart).

The servers are aimed at companies building large Web sites and enterprisewide intranets that are capable of supporting up to 40 million hits per day.

"As a Web-hosting service, we are looking for three attributes from any server — performance, reliability and cost," said Larry Thompson, service line manager of Web Advantage at BBN Planet in Boston. The new Sun servers

Netra servers, *page 49*

Sun bolsters World Wide Web line

Netra Internet Server 4000 and 5000 include the following features:

- Netscape's SuiteSpot Web server software
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The new AcerNote™ Nuovo™ delivers up to seven hours of battery life from a single battery—hours longer than any other notebook PC! And since you'll be working longer, its ergonomically engineered keyboard raises and tilts for easier access and viewing.

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New Products

Promise Technology, Inc. and **O. R. Technology, Inc.** have announced FloppyMax, a controller to support O. R. Technology's 120M-byte LS-120 floppy disk drive.

According to O. R. Technology in Campbell, Calif., FloppyMax was designed for new or existing systems that include a 16-bit Industry Standard Architecture slot in DOS, Windows 3.1, Windows 95 and Windows NT environments.

FloppyMax costs $49 and is available from Promise Technology. The floppy disk drive costs $210 and is available from O. R. Technology.

▶ *O. R. Technology*
(408) 866-3000
www.ortechnology.com

Chem USA Corp. has announced ChemBook 6800, a notebook computer designed for the small office and for travelers.

According to the Hayward, Calif., company, ChemBook 6800 was designed to display live-action video. The product features 16-bit sound with built-in stereo speakers.

ChemBook 6800 weighs 7.5 pounds. It costs $2,320.

▶ *Chem USA*
(510) 785-8080

Molex, Inc. has introduced MicroCross Enhanced Video Connector System, a connector and cable system.

According to the Lisle, Ill., company, the system was designed to eliminate the wiring maze found in conventional multimedia computers. It allows the monitor to be used as an I/O hub for high-frequency multimedia applications.

The system includes receptacles, plugs and other components. Pricing for 100,000 receptacles starts at $2.77 each.

▶ *Molex*
(630) 969-4550
www.molex.com

U. S. Robotics Corp. has announced DataBurst ISDN 128K, a desktop parallel port terminal adapter.

According to the Skokie, Ill., firm, the product was designed for applications that require a higher bandwidth of Integrated Services Digital Network (ISDN) through parallel ports.

Pricing starts at $239.

▶ *U. S. Robotics*
(708) 982-5001
www.usr.com

Micro Focus has announced the Mainframe Access product family to provide direct access to mainframe data files and source code.

According to the Palo Alto, Calif., firm, the family comprises a mainframe server and a series of optional workstation-based client services. Pricing for the server starts at $10,000.

▶ *Micro Focus*
(415) 856-4161
www.microfocus.com

Farabi Technology Corp. has announced the Ultima/400 Internet Client to connect to the Ultima/400 Server for Internet and access applications.

According to the Saint-Laurent, Quebec, company, the Ultima/400 Internet Client gives organizations an alternate means of providing AS/400 access to users regardless of their location.

The product costs $395.

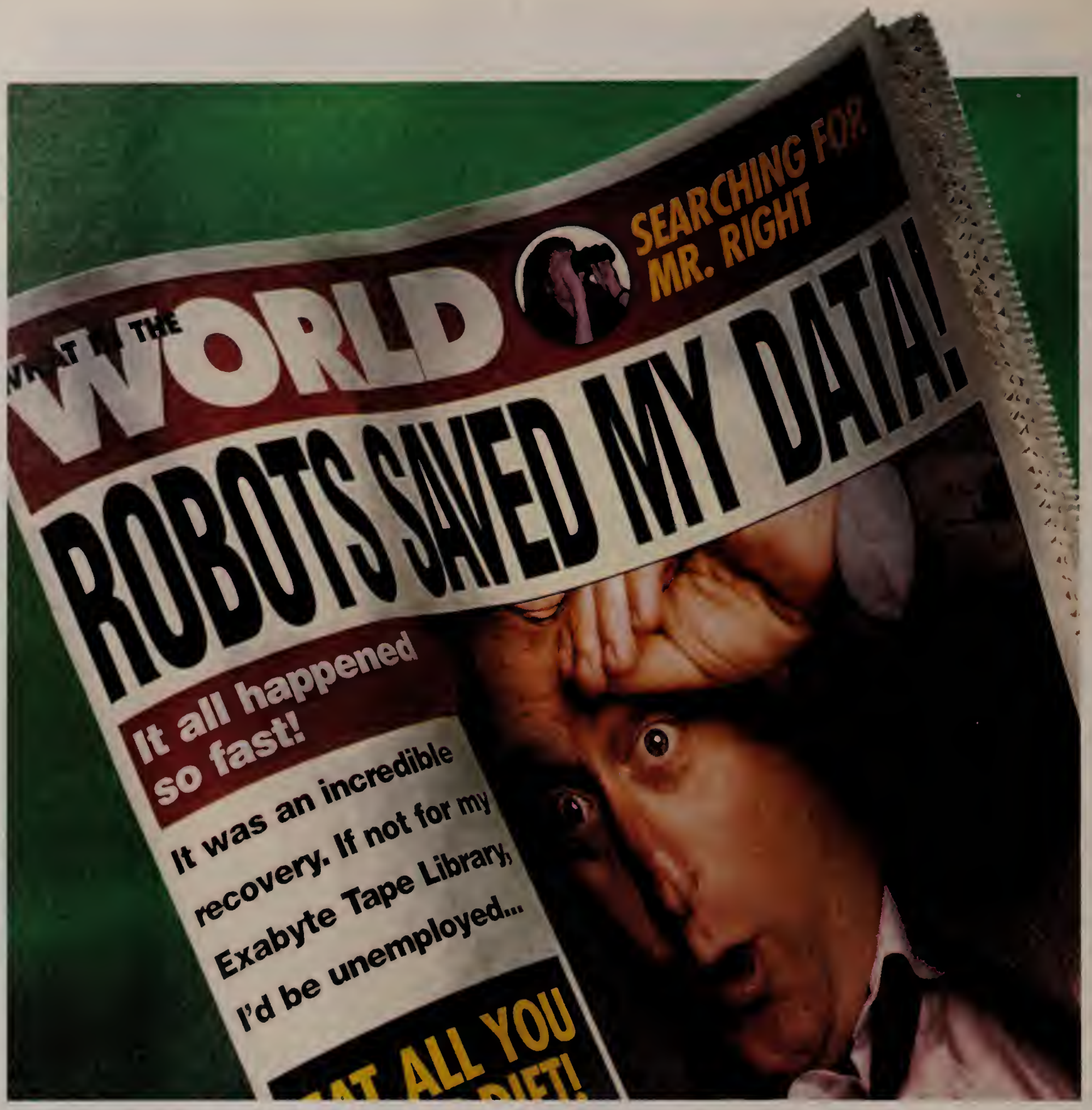
▶ *Farabi Technology*
(514) 332-3915
www.farabi.com

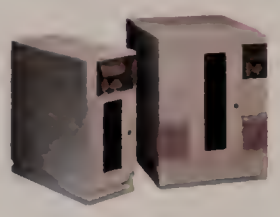
Teknor Industrial Computers, Inc. has released the VIPer807, a half-size, 133-MHz single-board computer with onboard SCSI interface.

According to the Montreal company, the onboard SCSI interface is provided via Adaptec, Inc.'s Fast SCSI II technology, which allows for synchronous transfer rates of 10M byte/sec.

Pricing for the VIPer807 starts at $940.

▶ *Teknor Industrial Computers*
(514) 437-5682
www.teknor.com





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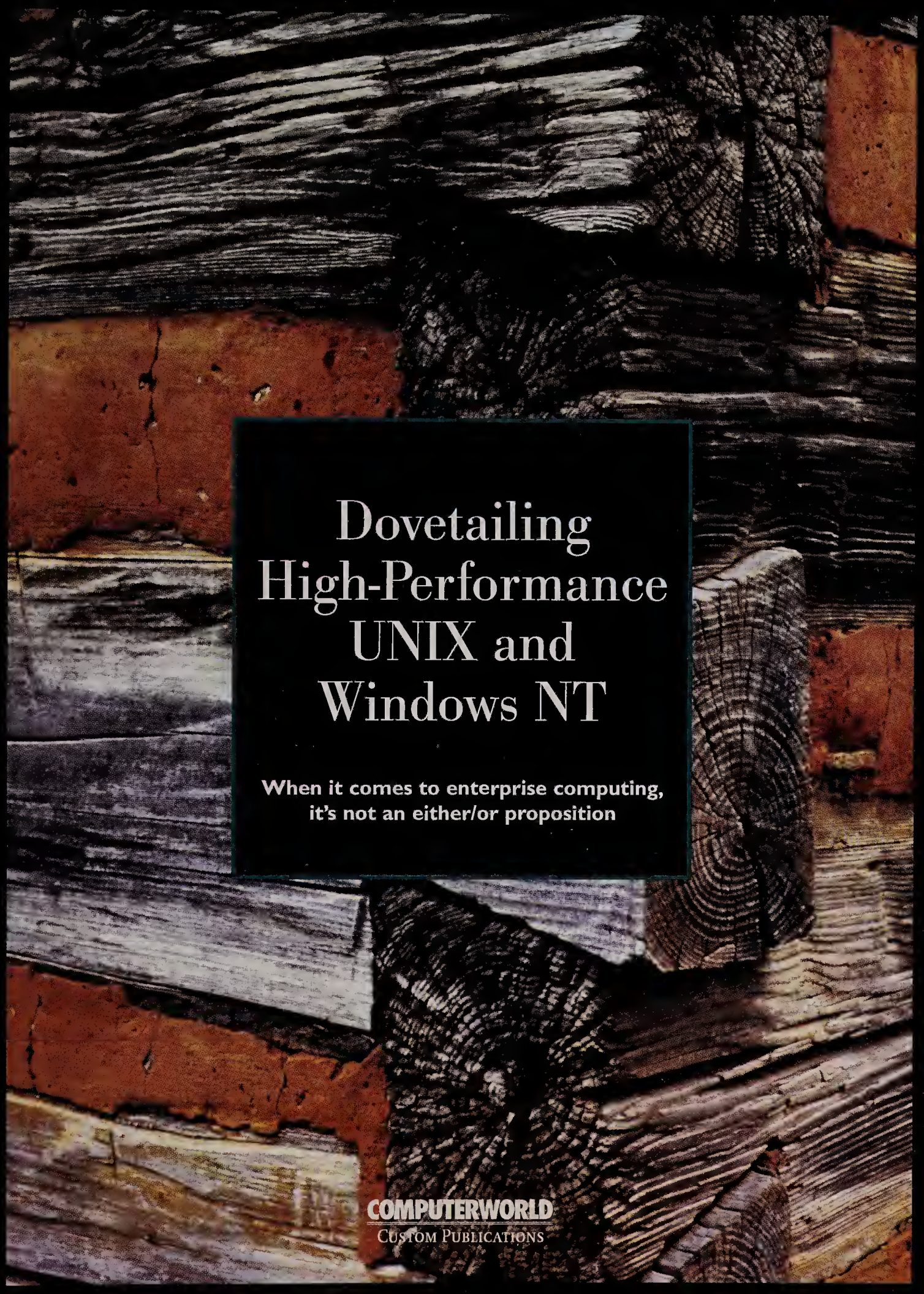

Dovetailing High-Performance UNIX and Windows NT

When it comes to enterprise computing, it's not an either/or proposition

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INTRODUCTION

"This Town Is Big Enough for the Both of OS"

Although a number of industry observers — particularly those fond of military metaphor — have made much of the "religious wars" between UNIX and Windows NT, many IS departments are using both operating systems in their distributed computing infrastructures, not to mention for application development. The truth is, many businesses are being built on the twin foundations of both enterprise computing environments.

However, managing combined UNIX and NT environments, IS faces special challenges, particularly when it comes to cross-platform systems management tools, application and system performance or managing software distribution. As one consultant notes, "Some assembly is required."

Similarly, there is no easy route when it comes to choosing the best implementation of each technology for a specific application or task. Users need apples-to-apples comparisons of the performance of these implementations. Where can they go to find them?

This special supplement will take a look at some of the reasons so many enterprises are combining UNIX and Windows NT, and will discuss the art of performance measurement for applications running in these two operating environments.

SPECIAL ADVERTISING SUPPLEMENT

After 25 years, UNIX System technologies are beginning a new life as foundations for today's enterprise computing solutions — due in part to the introduction of high-volume hardware built around Intel's Pentium Pro, and in part to leading enterprise UNIX vendors consolidating around SCO Unixware. At the same time, Microsoft Windows NT has evolved into a popular platform for not only enterprise applications, but also for the personal productivity tools on which Microsoft has built much of its success.

Dovetailing UNIX and Windows NT Inside the Enterprise

To some observers, these two operating systems are locked in hand-to-hand combat. With what amounts to a 25-year head start on Windows NT, UNIX systems currently support the lion's share of relational databases sold for midrange servers. But NT will be a fully enterprise-ready operating system for host servers once Microsoft and its business partners are done enhancing it. UNIX currently has advantages over NT at the high end in terms of scalability and availability of networking "hooks" to interoperate among many platforms; but at the low end, NT is pushing UNIX. In any case, enterprises that desperately need high-end servers to replace mainframes can't wait for NT to mature. Right now, the enterprise needs NT *and* UNIX, not one or the other.

Many corporations are running on the twin foundations of both

operating systems. For instance, Seattle-based Lindal Cedar Homes, Inc., has three Web servers on NT, and uses NT as a CAD file server, for E-mail, for some bill-of-material programs, for FoxPro and Access databases and for personal productivity software. However, the company runs its mission-critical functions on an IBM AIX RS/6000. "It's quite neat the way UNIX and NT can work together," says Martin Lindal, vice president of IS for Lindal Cedar Homes.

Customers who want both operating systems in their infrastructure are not bashful about letting vendors — particularly UNIX vendors — know what they want. "Vendors who used to be adamantly UNIX are doing both [UNIX and NT]," says Norton Greenfeld, who heads Implements Inc., a consulting firm in Wayland, Mass. "Their customers are telling them they have to do that, if they want to be vendor of choice."

If that's what customers are saying, many UNIX vendors are listening. "The most common environment [in the next few years] is going to be mixed NT/UNIX," Lewis Platt, CEO at Hewlett-Packard, recently told *Computerworld*. "NT is going to be a very important operating environment in the enterprise. But it will coexist with UNIX for a very long time."

Or as Frank Kenney, director of NT marketing for Data General, notes, "For many businesses today, using UNIX and Windows NT Server for their corporate computing is not an either/or proposition. They are using NT to run their client/server applications and UNIX on their high-end database server."

"The most common environment in the next few years is going to be mixed NT/UNIX."

Other vendors selling both environments include Acer America, Advanced Logic Research, Apricot Computers, Compaq Computer, Digital Equipment Corp., Hitachi, IBM, ICL/Fujitsu, Intergraph, NCR, Olivetti, Sequent Computer Systems, Tricord Systems, Unisys and Zenith Data Systems. (For more information on these vendors' platforms, see the charts on pp. 12-14.)

Analysts see this dual-OS strategy growing. "Users rarely plan to invest in NT at the expense of UNIX," says Lone Poulsen, an analyst at International Data Corp.'s European UNIX Service in Copenhagen. "Often

investments are made in both." According to Poulsen, most users polled in IDC's 1995 annual user study, said their intention to buy either UNIX or NT did not exclude the other operating system from their plans.

In fact, many enterprises are discovering that using both operating systems in the infrastructure improves corporate efficiency and productivity. "It's not about which operating system scales better or performs better in multiprocessing environments," says Michael Dortch, a strategic marketing consultant for AIM Technology Inc. "To compare the two, or to talk about one replacing the other, is a short-sighted strategy. Each environment does a set of things, and both of these sets are important to enterprise computing. Business people have lists of things to do, and want to know which hooks allow them to manage all these things."

"To compare the two operating systems, or to talk about one replacing the other, is a short-sighted strategy."

Often, the choice between NT and UNIX is no choice at all for users, notes analyst Greenfeld. "In 90% of the cases, the user's environment needs quickly determine whether to use UNIX or NT," he says.

UNIX, notes Dortch, is an infrastructure that the IS department can plug other things into without worrying about them working well together. Now, with the Web, intranet and Internet transforming corporations, UNIX has become the default infrastructure for corporate computing. NT, he notes, is a tactical computing platform that is popular with workgroups as both a desktop and a server, but is not big enough or robust enough to be the whole enterprise computing infrastructure. "NT has extended personal productivity applications to the workgroup, but what it doesn't do is link the workgroup or desktop to all the legacy systems," he says.

Or as Dan Kusnetzky, research director for IDC's UNIX and Server Operating Environments Program, notes, "UNIX wins when the IS department is involved. Windows NT is starting to make its presence felt in corporate environments, but it hasn't been around long enough to generate the type of track record that IS groups like to have."

According to Dortch, the integration of UNIX and NT is itself not a new trend. What is new, however, is the recognition of the value of integrating the two. Vendors are also recognizing this, and, as a result, are

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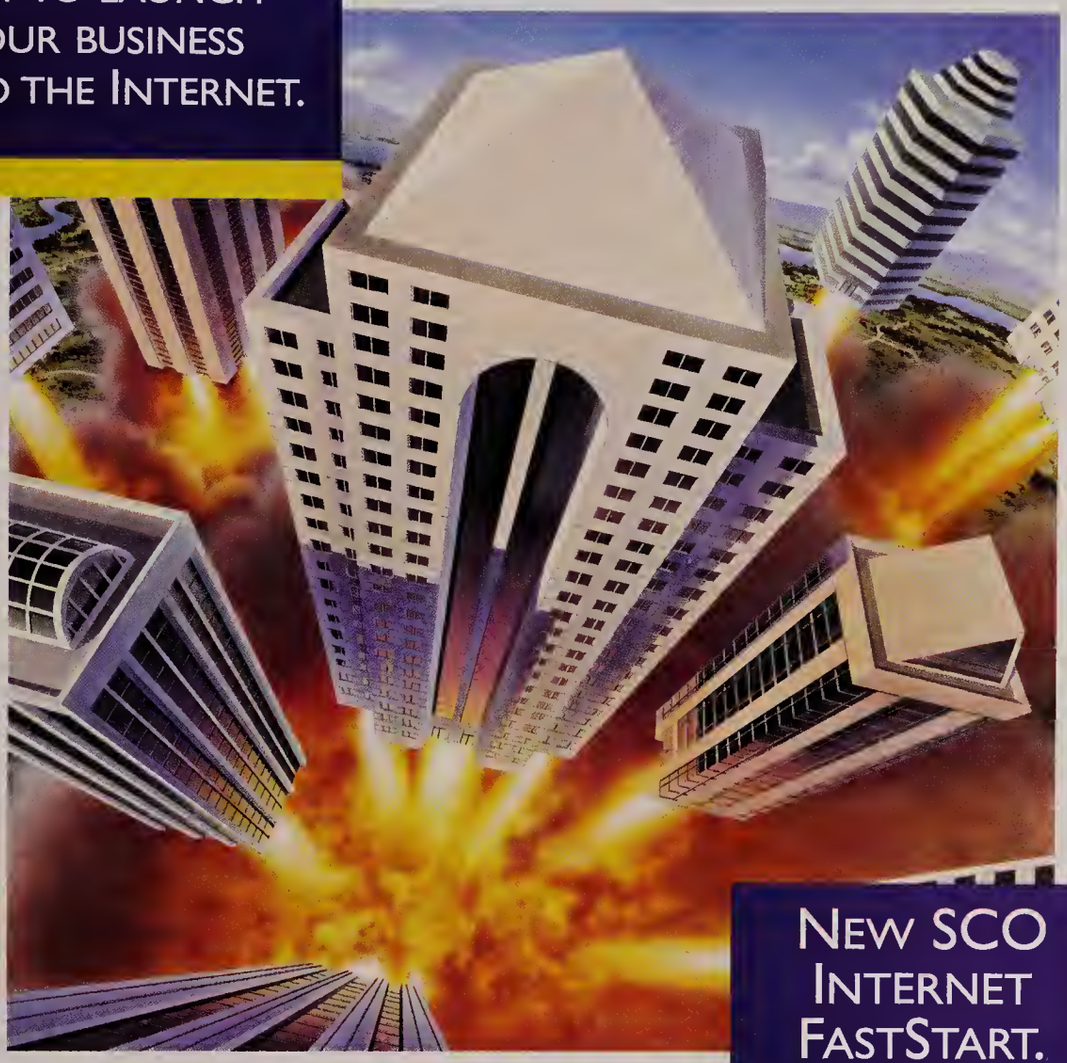

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Striking while the Iron is Hot

This year's UNIX Expo Plus marks the first time that the AIM Technology Hot Iron Awards will be given for both UNIX System and Microsoft Windows NT technologies. Awards will go to those vendors recognized by AIM as having the top systems in pure performance and price/performance.

In a show of vendor synergy, the NT Hot Iron awards will be presented by Bill Gates, chairman and CEO of Microsoft, while the UNIX Hot Iron awards will be given by Alok Mohan, president and CEO of Santa Cruz Operation (SCO). Both sets of awards are sponsored by *Computerworld*, Blenheim Group US and HLC Internet.

"AIM is excited to be a catalyst in the growing synergy of Windows NT and UNIX in enterprise computing," says Tammy Bauer, director of performance measurement for the provider of independent benchmark tools and services. "Users and developers can now use AIM's benchmarks and Certified Reports to make apples-to-apples comparisons of varying implementations of UNIX or Windows NT. This will help users build systems and networks that perform better and interoperate more seamlessly."

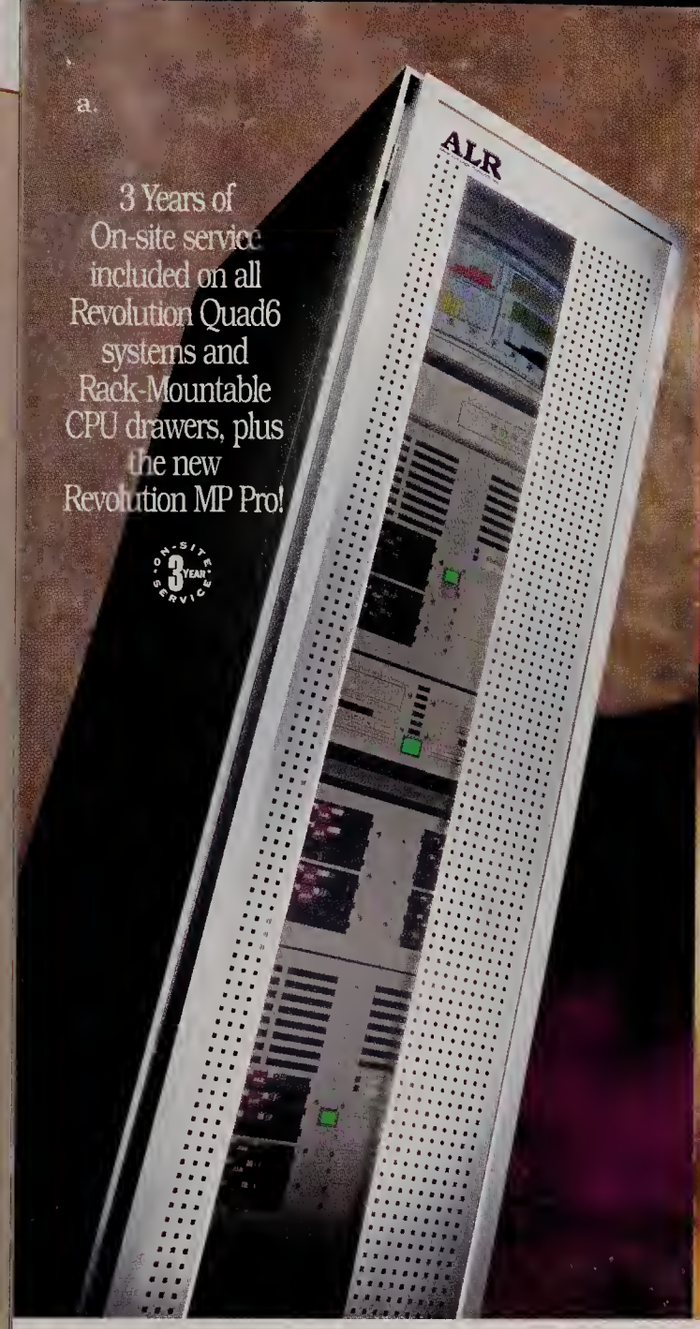
UNIX systems makers have used AIM's benchmarking tools since 1981. In July, AIM added tools for evaluating NT-based solutions. "These new tools test the interaction between NT and the hardware, while modeling general application environments that run on typical domain servers and file servers under Windows NT," says Bauer. "Since a majority of the tests in the AIM benchmarks for NT utilize specific API and system function calls that are unique in the NT architecture, the results from the NT benchmarks cannot be compared to those of the UNIX benchmarks."

AIM offers free procurement assistance that will help a company select the tests that are appropriate for its situation. This may involve running AIM tests on installed systems to establish a "baseline" measurement with an existing mix, or simply adjusting the benchmark mix to model a specific end-user application environment. The customer then requires, as part of its RFP, that all responding vendors provide AIM Certified Benchmark Reports for the proposed configurations. The cost is usually free to the user, with the benchmarking expense borne by the participating vendors.

The ability to leverage AIM's results is a particular advantage for purchasers making small- to medium-sized equipment acquisitions that otherwise would receive scant performance measurement attention from hardware vendors.

AIM Technology will continue to expand the breadth and depth of its test tools. By keeping up with the changes in open operating systems and the gradual merging into a combined standard, AIM will offer the tools and services to report the trends in system performance: CPU technology, memory performance, disk subsystems, networking performance, cluster performance, caching technology, portable parallel processing, etc.

Based in Santa Clara, AIM provides reliable benchmark data to purchasers of computer systems. Its products are used by virtually every computer maker and are considered standards at hundreds of Fortune 1000 companies and government agencies. It is a division of Network General Corp., a provider of fault and performance management solutions for enterprise networks.



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Hot Iron Awards NT/UNIX Lineup

Company	Phone/URL	Operating System	CPU Type
Acer America Corp. 2641 Orchard Parkway San Jose, CA 95134	408-432-6200 www.acer.com	Windows NT SCO/Unixware	Intel
Advanced Logic Research 9401 Jeronimo Irvine, CA 92718	800-444-4ALR www.alr.com	Windows NT SCO/Unixware Solaris for x86	Intel
Apricot Computers Ltd. 3500 Parkside Birmingham, B37 7YS UK	44-21-717-7171 www.apricot.co.uk	Windows NT SCO/Unixware	Intel
Bull S.A. Tour Bu 1 Place Carpeaux 92800 Puteaux France	+33 46969090 www.bull.com	AIX	PowerPC
Compaq Computer Corp. 20555 State Highway 249 Houston, TX 77070	800-345-1518 www.compaq.com	Windows NT SCO/Unixware Solaris for x86	Intel
Data General Corp. 4400 Computer Drive Westborough, MA 01580	800-4DG-OPEN www.dg.com	Windows NT DG/UX	Intel Motorola
Dell Computer Corp. 1807 W. Braker Lane, Bldg. C Austin, TX 78758	512-338-4400 www.dell.com	Windows NT	Intel
Digital Equipment Corp. 129 Main Street Maynard, MA 01754	800-DIGITAL www.dec.com	Windows NT DEC OSF/1 Digital UNIX	Alpha Intel
Hewlett-Packard, Inc. 3000 Hanover Street Palo Alto, CA 94303	415-857-1501 www.hp.com	HP/UX Windows NT SCO/Unixware	HP-PA RISC Intel
Hitachi Ltd. 1 Ikegami Haraoke Owanasahi Aichi 488 Japan	81-561-53-6111 www.hitachi.com	AIX Windows NT	IBM RISC Intel
IBM Corp. Old Orchard Road Armonk, NY 60504	800-IBM-3333 www.ibm.com	AIX Windows NT	PowerPC IBM RISC Intel
ICL/Fujitsu Ltd. Lovelace Road, Bracknell, Berkshire RG12 8SN UK	44-1344-472000 www.icl.com	Windows NT SCO/Unixware NXV7	Intel SPARC
Intergraph One Madison Industrial Parkway Huntsville, AL 35894-0001	205-730-2000 www.intergraph.com	Windows NT Solaris for x86	Intel

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12:30 p.m. – 1:15 p.m.
Eric Hahn, Senior Vice President, Enterprise Technology Netscape Communications Corp.

Wednesday, October 9
9:00 a.m. – 9:45 a.m.
William H. Gates, Chairman and Chief Executive Officer, Microsoft Corporation

1:15 p.m. – 2:00 p.m.
Alok Mohan, President and Chief Executive Officer, SCO

Thursday, October 10
9:00 a.m. – 9:45 a.m.
Russell Lewis, Chief Information Officer, Jeffries & Company Inc.

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Suppliers Benchmarking Systems with AIM

Company	Phone/URL	Operating System	CPU Type
Motorola Computer Group 2900 South Diablo Way Tempe, AZ 85282	602-438-2214 www.mot.com	Windows NT AIX	PowerPC
NEC Technologies Inc. 1414 Massachusetts Avenue Boxborough, MA 01719	508-264-8000 www.nec.com	Windows NT	Intel
NCR Corporation 3325 Platt Springs Road Columbia, SC 29170	803-796-0271 www.ncr.com	Windows NT UNIX System V	Intel
Ing. C. Olivetti & C. S.p.A. Via Jervis 77 10015 Ivrea Italy	+39-125-5200 www.olivetti.com	SCO/Unixware Windows NT	Intel
Ross Technology 5316 Highway 290, West Austin, TX 78735	512-892-7802 www.ross.com	Solaris	HyperSPARC
Sequent Computer Systems 15450 S.W. Koll Parkway Beaverton, OR 97006	503-626-5700 www.sequent.com	DYNIX/ptx Windows NT SCO Unixware	Intel
Siemens Nixdorf Informationssysteme AG Heinz Nixdorf Ring 1 33106 Paderborn Germany	49-5251-8-12767 www.sni.de	SINIX-N	MIPS RISC
Silicon Graphics Inc. 2011 N. Shoreline Blvd. Mountain View, CA 94043	800-800-7441 www.sgi.com	IRIX	MIPS RISC
Sun Microsystems 2550 Garcia Avenue Mountain View, CA 94043	415-960-1300 www.sun.com	Solaris	SPARC
Tricord Systems 2800 Northwest Boulevard Plymouth, MN 55441	800-TRICORD www.tricord.com	Windows NT SCO/Unixware	Intel
Unisys Corp. 2700 North First Street San Jose, CA 95134	408-434-2848 www.unisys.com	Windows NT UNIX System V	Intel
Zenith Data Systems 2150 E. Lake Cook Road Buffalo Grove, IL 60089	708-808-5000 www.zds.com	Windows NT SCO/Unixware Solaris on x86	Intel PowerPC

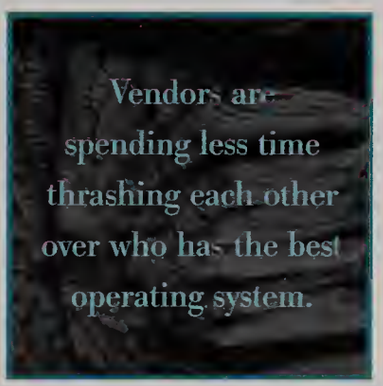
Source AIM Technology (1996)

This [illegible] companies represent those competing for the Best Ads Awards and for the above chart info. (Information submitted by AIM)

spending less time thrashing each other over who has the best operating system and are spending more energy on figuring out how they can deliver interoperability and comply with standards — in short, how they can make all the environments that are critical to users work well together.

Evolving performance measurement technologies are giving users the data they need to compare and implement enterprise computing solutions. For instance, benchmarks from an independent third-party firm such as AIM Technology do not reveal whether UNIX or NT performs better in a particular environment, but allow a user to pick best-of-breed UNIX solutions and best-of-breed NT solutions. This in turn provides a foundation for building a network where each solution is the most cost-effective they can have. In short, benchmarks are a starting point for creating a heterogeneous network with high-performance interoperability.

When both UNIX and NT are implemented in an enterprise, the users see improved performance overall and also achieve a greater extended reach into all the corporate computing resources. However, Dortch notes, "some assembly is required." That is clear to Lindal Cedar Homes. To integrate between UNIX and NT, the company uses a terminal emulator, and recently has also started using ODBC connectivity that makes the UNIX data warehouse look like Access data tables.



It is also clear to Mark Abbott, professor of oceanography at Oregon State University in Corvallis. His department uses Microsoft SQL Server running under NT Advanced Server, while the hardware is a dual-Pentium server from HP. "We are using Java to create data access applets for sharing data as well as for analysis and visualization data across the Sun Solaris workstations," he says.

But even if IS has to conjure up some innovative solutions when UNIX and NT are combined in a corporation, more and more companies are heading toward this heterogeneous solution. As Dennis Leitner, IT director at Snap-On Inc., in Kenosha, Wisc., puts it, the co-existence of NT and UNIX "is definitely the direction we will go in."

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CD technologies turn toward workgroup

By April Jacobs

CD-ROMs and the software that allows users to access and write to them is showing up in workgroup-level document imaging and other data-heavy applications, analysts said.

Unlike with expensive and proprietary optical storage media, standardized desktop CD-ROM recorders can allow users to store large amounts of data on a single disc and distribute it to any workgroup that uses a server with a CD-ROM drive.

Cost factor

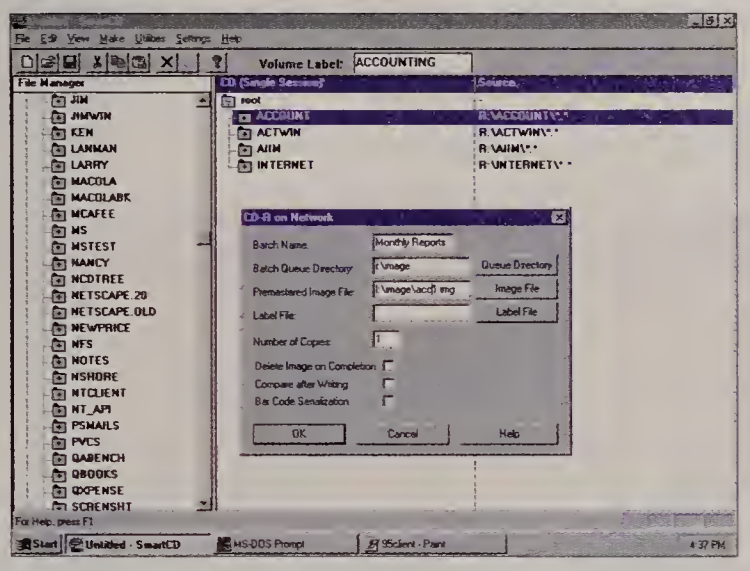
And unlike proprietary optical storage devices, standard CD-ROM recorders don't require administrators to install special access software on the workstation of every user who needs that data.

Price is also an issue. Users would expect to spend about $2,000 for a high-end 2.6G-byte optical drive, but a desktop recorder that can store data on an ordinary CD-ROM can be had for about $500 to $600, said Ken Weilerstein, a senior analyst at Datapro Information Services Group in Delran, N.J.

According to Weilerstein, more traditional optical technology allows for much higher capacity per disc and more efficient storage, but it is still more expensive per megabyte stored than CD-ROM drives.

Weilerstein said he sees promise for CDs because they are flexible and versatile, allowing users to access information at the desktop or workgroup level.

Jeff Duveneck, manager of application development at Amada Engineering and Service in LaMirada, Calif., said that is why his company went with CD-ROM-based storage and read-access software for its document imaging system. The setup is similar to an optical jukebox but uses a standard CD-ROM storage format, not a proprietary optical disc system format.



Smart Storage's *SmartCD software can ease sales representatives' task of researching client histories and service records*

"We are a service company, and we have hundreds of thousands of documents," Duveneck said. Running SmartCD software from Smart Storage on a Windows NT server allows customer service representatives to look up service records, put together a client history and troubleshoot problems, he said.

"The clients don't need anything special because the software resides on the server," Duveneck noted.

Nathaniel Palmer, a senior market analyst at Delphi Consulting Group in Boston, said he expects the market for CD-ROM software and media to grow most in the workgroup arena.

For archival purposes, Palmer said, CD-ROM is viable but still isn't optimal for near-line or online technologies, when users require virtually immediate access to information. Palmer said the applications that manage those environments are still relatively immature for large-scale enterprise networks.

For example, Palmer said, companies that want to archive images of checks received monthly could benefit from CD-ROM media because it is relatively inexpensive and portable.

WorldMark

CONTINUED FROM PAGE 43

cluster two quad-processor boxes together — a more expensive and complex option than straightforward processor upgrades.

"Clustering also doesn't give the same kind of performance yield as an in-box upgrade nor is it as easy to manage," said John Webster, an analyst at The Yankee Group in Boston.

As a result, the NCR products bring to market a broader range of scalability than was previously available for servers that run Windows NT, he said. "Things like [NCR's] Top End Transaction Monitor and their Lifekeeper [management] software have been out there for a while. They have been beat on, tested and have proved to be fairly bulletproof," he said.

"Future scalability is always a good thing, even if it comes at a price," said Greg Farbolin, a major shareholder at Honey Baked Hams Co. in Atlanta. The firm has been using an NCR quad-processor system for the past two years to service its catalog business. The company doesn't expect to push the system to capacity for some time yet.

Initially, the WorldMark 4300 will support only up to four 166- or 200-MHz Pentium Pro chips. Eight-processor support will be available in the first quarter next year.

The system can be configured as a single node, a cluster of nodes or a rack-mount system. It offers six Peripheral Component Interconnect (PCI) and Extended Industry Standard Architecture (EISA) expansion slots, up to 8G bytes of memory and up to 48G bytes of internal storage. Pricing ranges from $17,500 for a single-processor box to $100,000 for a four-processor system.

Netra servers

CONTINUED FROM PAGE 43

meet those requirements, he said.

"In Web-hosting, the operating system adds some value, but performance gains come predominantly from the hardware," Thompson added. The company uses Sun hardware to run its Internet services and Web-hosting business.

"There may be a need for this kind of a system among the very high-end [Internet] service providers, but these are not systems for your typical mom-and-pop outfits," said Rich Partridge, an analyst at D. H. Brown Associates, Inc. in Port Chester, N.Y. He said as companies and service providers begin to push existing Web servers to their performance limits, prebundled symmetrical multiprocessor Web servers will allow companies to easily scale their systems upward.

Sun last week also introduced the Netra Internet Server 2/1200, a lower-end, dual-processor version bundled with similar software aimed at departmental intranets and small Web sites.

Server technology

The Netra family is Sun's lineup of tightly bundled servers announced earlier this year, featuring a range of integrated software and hardware optimized for the Web. Such bundling is supposed to help companies quickly set up Web servers by easing configuration and installation hassles.

Several vendors are offering such integrated servers. They include traditional Unix vendors such as Silicon Graphics, Inc., Hewlett-Packard Co. and Digital Equipment Corp. Some PC vendors such as Compaq Computer Corp., for instance, also offer bundled Web servers with integrated Web software from vendors such as Netscape and Microsoft Corp.

Typically, such servers are tweaked versions of a vendor's existing commercial servers.

Sun's latest additions, for instance, are based on its Enterprise 4000 and 5000 servers announced earlier this year, with a range of Web server software from Netscape. With the Netra 4000 and the Netra 5000, users can select from a variety of software, including Netscape Enterprise Server, Netscape Proxy Server, Netscape Directory Server and LiveWire Pro.

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New Products

Hewlett-Packard Co. has announced the 10/100Base-T autosensing switch module with 100Base-TX and 100Base-FX support for the HP Advance Stack Switch 2000.

According to the Palo Alto, Calif., company, the HP Advance Stack Switch 2000 can support up to 12 10/100Base-T ports for throughput capacity of 600M bit/sec. or greater.

Pricing for the HP Advance Stack Switch 2000 starts at $1,249.

▶ *Hewlett-Packard*
(415) 857-1501
www.hp.com

Acer America Corp. has released AcerNote Light Multimedia, a six-pound notebook computer.

According to the San Jose, Calif., company, the notebook provides Intel Corp. Pentium processor-powered multimedia capabilities, such as 16-bit stereo sound, built-in dual speakers, zoomed video port and microphone and line-in jacks.

Pricing starts at $2,499.

▶ *Acer America*
(408) 432-6200
www.acer.com

Polycom, Inc. has announced SoundStation Premier and SoundPoint for full-duplex audioconferencing.

Polycom's SoundPoint *provides full-duplex audioconferencing*

According to the San Jose, Calif., company, the SoundStation Premier is an upgraded version of Polycom's popular SoundStation. SoundPoint is available in a PC version that connects to a sound card for Internet telephony. Both products provide full-duplex communications and can be used with desktop PCs.

Pricing for SoundStation Premier starts at $1,295; pricing for SoundPoint starts at $299.

▶ *Polycom*
(408) 526-9000
www.polycom.com

Kofax Image Products has released NetScan, a network scan server.

According to the Irvine, Calif., company, NetScan was designed to allow workgroups to share a scanner in the same way that they share laser printers. NetScan includes hardware and software to connect a Hewlett-Packard Co. ScanJet scanner to a Novell, Inc. NetWare network.

NetScan costs $895.

▶ *Kofax Image Products*
(714) 727-1733
www.netscan.kofax.com

Western Scientific, Inc. has announced CycloneRAID, a family of disk storage systems.

According to the San Diego company, CycloneRAID simultaneously supports RAID levels 0, 3 and 5.

Pricing for CycloneRAID starts at $15,960.

▶ *Western Scientific*
(619) 565-6938
www.wsm.com

Winchester Systems, Inc. has announced a high-capacity series of Flash Disk RAID.

According to the Woburn, Mass., company, the improvements feature 9.1G-byte Fast/Wide SCSI disk drives in a half-height, 3.5-in. format. The drives are packages in the company's hot-swap canisters, which support a faster data transfer rate.

Pricing starts at $19,560.

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KEYNOTE SPEAKERS

COLIN WHITE
President, DataBase Associates; DB/EXPO Conference Director
Tuesday, Dec. 3, 9:30 am

CHARLES B. WANG
Chairman & Chief Executive Officer, Computer Associates
Tuesday, Dec. 3, 9:50 am

EDWARD J. ZANDER
President, Sun Microsystems Computer Company & Corporate Executive Officer, Sun Microsystems, Inc.
Tuesday, Dec. 3, 12:45 pm

THE GREAT DEBATE *Weds, Dec. 4, 12:30 pm*
PHILIP A. BERNSTEIN, Microsoft Corporation
HERB EDELSTEIN, Chairperson, Two Crows Corp.
ROBERT EPSTEIN, Sybase, Inc.
DON HADERLE, IBM Corporation
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Oracle's new visual tool set will generate Java, **55**

Software

No MART is an ISLAND

Incompatible formats can isolate data

By Craig Stedman
PHOENIX

STEVE MUNDAY

Data marts let companies act locally when they develop decision-support applications. But don't forget to think globally, experienced customers warn.

Otherwise, you could end up with a mishmash of incompatible data marts that present diverging views of your information to end users.

That could create situations where users find data incomprehensible or simply can't access the information they need, according to several information systems managers who attended the DCI Data Warehousing Conference here last month.

First Data Resources found out about those dangers firsthand. A unit of First Data Corp. in Omaha, First Data Resources processes transactions for credit-card companies. But its seven departments have created individual pools of client data that are essentially surrounded by their own little islands, said Michael Grear, a business systems architect at First Data Resources.

Separate boxes

The data marts store subsets of information by function, such as transactions, fraud and collections. "We want to be able to have our clients go to different databases, but right now [the company's departments] have their own little pieces of information on their own boxes," Grear said.

The departments also run their own data extraction programs against First Data's production systems, putting a strain on resources, Grear said. In an attempt to impose order and pull everything together, the company is developing a central data warehouse that is expected to hold up to 4T bytes of information, he said.

Data marts are reduced-scale warehouses that hold specific subsets of historical data or are targeted at individual departments. Both marts and warehouses let companies that seek a competitive edge track things such as customer buying patterns and use the findings to guide their operations.

But the cost and complexity of building centralized corporate warehouses is leading to a surge in popularity for data marts. For example, an August survey of 541 attendees at a data warehouse conference in New York found that 46% planned to build warehousing architectures around data marts, compared with the 30% found to use the approach today, according to Meta Group, Inc. in Stamford, Conn.

But choosing to build multiple data marts rather than a single warehouse doesn't eliminate the need for central planning, users and analysts at the conference said. They advised that new customers keep the following points in mind:

- A company's data marts should all hew to common data definitions, structures and access routines so that end users see the same face wherever they look.
- The process of getting operational data in shape for warehousing in different data marts should be centralized and done with a consistent set of extraction and transformation tools.

Data marts split a company's historical information into chunks stored on different systems. They are faster and cheaper to build than data warehouses.

Ryder System, Inc., a truck leasing and logistics management company in Miami, is building a series of integrated data marts that will be fed from one point.

"We're really not running a single data warehouse, but we have an enterprise view of our data marts, and we administer them centrally," said Jim Sutter, data warehouse architect at Ryder.

By going with data marts, Ryder expects to have a flexible and relatively cheap architecture that allows decision-support capabilities to be quickly put in place as new business needs arise, Sutter said.

But the upfront integration work hopefully will make it possible to put a data mart anywhere on Ryder's network and provide end users with wide-scale access to the information, he added.

More tools

Looking to cash in on the trend toward reduced-scale warehouses, vendors have announced a slew of products to build and manage data marts. Topping the list is Microsoft Corp., which detailed a planned warehousing framework for its SQL Server database for Windows NT.

Microsoft plans to build warehousing features into SQL Server but won't ship a new version of the database until next year.

Meanwhile, IBM introduced an NT-based version of its Visual Warehouse data mart software to ship by the end of the year. Sybase, Inc. will add NT support to its Sybase IQ database for data marts in the first quarter of next year. And Hewlett-Packard Co. released Data-Mart Manager, a Unix-based query acceleration tool. — *Craig Stedman*

Comshare tries verticals on for size

By Sharon Gaudin

Comshare, Inc. is going vertical with its decision-support tools.

Specifically, the Ann Arbor, Mich.-based company is targeting the retail and packaged consumer goods arenas. Comshare is releasing three products this month, with two already on the market and one more on the way.

"Comshare knows these markets. They're business savvy, so their tools are right on," said Teresa Wingfield, a senior industry analyst at Giga Information Group in Cambridge, Mass. "If an IS manager was trying to do this work with another product, he would end up buying four or five disparate applications that didn't integrate with another."

The new products include the following:

- The Arthur Allocation product, a decision-support tool that was designed specifically for the retail market. The allocation product started shipping last week and has a list price of $140,000 for 10 users.
- The Commander BudgetPlus, which was designed to reduce the time and effort financial departments put into creating a budget. Users punch in their budget information. If a manager requests that the budget be cut by 10%, BudgetPlus lists a set of ways to make those cuts in the initial budget. Budget-

Comshare, *page 57*

"Jump to the Web. Parker v. Boswell, Ohio State Supreme Court, 1986."

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Oracle still working to add Java support

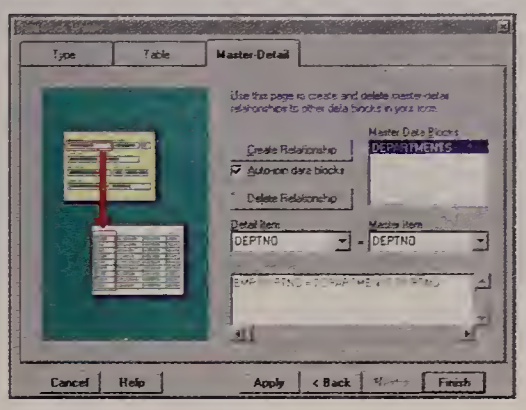
By Frank Hayes

With corporate users demanding better Internet development tools, Oracle Corp. plans to offer the ability to generate Java from its Developer 2000 visual development kit — but not quite yet.

Java won't make it into the next version of Developer 2000, despite Oracle's previous promises.

Oracle originally promised support for Java, Sun Microsystems, Inc.'s Internet development language, by the end of this year. But that feature isn't in the beta version of Developer 2000 2.0, which went to testers last month. The company expects Java support to be added to an interim release of Developer 2000 sometime next year — though it is one of the most eagerly awaited features of the forthcoming release, users said.

Being able to generate a Java application that will communicate with a Developer 2000 server "will truly allow us to have a three-tier architecture, which, to date, has been a little bit lacking in Developer 2000," said one Developer 2000 user at a large retailer, who asked to remain anonymous.



Data wizards in Developer 2000 2.0 *were designed to let developers easily generate connections to Oracle or other databases*

But the new version, which runs on Windows 3.1, Windows 95, Windows NT, Mac OS, OS/2 and Unix, already adds wizards to guide developers through the process of building database connections. It also has libraries of reusable Developer 2000 objects to which corporate developers can add their own code.

"Object libraries make managing software easier. You don't have to know the original source file a routine is in — you can just include the library," said Michael Brando, an engineering manager at Perkin-Elmer Corp. in San Jose, Calif., who is testing Developer 2000.

Share and share alike

The tool set also improves support for development teams via a Project Builder module that lets developers share sets of application and screen logic and define and enforce development standards. The new version also improves the ability to partition applications so parts of the application run on different machines.

Developer 2000's ability to run the same application on Windows-based PCs, Macintoshes and Unix workstations remains important to many shops, Brando said. Sybase, Inc., which shipped the Windows version of PowerBuilder 5.0 earlier this summer, is still testing its Macintosh and Unix versions of the visual tool set. The Macintosh version of PowerBuilder 4.0 arrived nearly a year after the Windows version.

But developers are waiting for better Internet support — something that Oracle and its rivals among the visual development environments have been struggling to get out the door.

"When that's done, it should really help us with our Internet development work," Brando said.

"There's a lot that can be done with what we have," said Paul Mundell, decision-support specialist at Warner Bros., Inc. in Burbank, Calif. "But you're always balancing what it's possible to do with what you'd like to do. The tools just aren't there yet."

Developers worried about safety of Java and ActiveX

By Frank Hayes

Will Java and ActiveX ever be safe?

Corporate Internet developers have good reason to wonder after months of reports by researchers on security problems with both Java, Sun Microsystems, Inc.'s Internet language, and ActiveX, Microsoft Corp.'s Internet component system.

Internet security

"There are a lot of security issues that haven't been addressed yet," said David Kelly, an analyst at Hurwitz Group, Inc. in Newton, Mass.

Java, which was designed to limit a downloaded program's ability to access a user's data or system resources, has been plagued by reports of holes in that security blanket. And an ActiveX component, which can gain complete control of a user's computer when downloaded, depends for its security on users' willingness not to download components of unknown origin.

And although no new reports of major problems with either system have surfaced recently, many corporate development shops have opted to use these technologies only on their internal networks.

Within a corporate intranet, many key concerns about Java and ActiveX security become moot because developers can control what goes on the network as World Wide Web pages, Java applets or full-fledged client/server applications.

For example, aerospace giant The Boeing Co. is using Java internally for development projects but discourages users from downloading Java applets and ActiveX components from outside the company.

Other companies are configuring their corporate firewalls to block Java and ActiveX components from being downloaded from outside the enterprise.

That approach creates headaches for firms such as the Coris division of R. R. Donnelley & Sons Co. in Chicago, which has built a Java-based application to let customers at other companies submit material to be printed or published in CD-ROM or other forms by Donnelley.

"We've developed the application, but we can't deploy it to a customer sitting inside his corporate firewall unless we play some special games," said John Gawkowski, a Java software architect at Coris. JavaSoft, Sun's Java division, is still defining standard ways to use Java through firewalls, he said.

But on intranets, where ActiveX is already used with many client/server development tools and Java is rapidly gaining acceptance, use of the technologies is only likely to increase, users said.

Better inside the firewall

Corporate developers' concerns about using Java and ActiveX:

Internet	Intranet
Java applets and ActiveX components are of unknown origin	Java and ActiveX components are easier to test and eliminate if problems are discovered
Hostile components can exploit security holes to damage or transmit data	Problems with components are more likely to come from bugs than intentional mischief
Although corporate firewalls can block Internet components, that prevents business-to-business uses	Higher bandwidth on intranets makes component downloading more practical

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POSTSCRIPT

Word 97 goal: Simplify

By Lisa Picarille

The forthcoming version of Microsoft's Word focuses on four areas — basic letter writing, document creation, integration with the Internet and sharing information with other Office applications.

Word 97, the newest version of Microsoft Corp.'s best-selling word processor, is due in December as part of the Office 97 package and in February as a standalone product.

A handful of new features is aimed at simplifying the process of writing letters. They include a Letter Wizard, a style preview feature and a built-in grammar checker, which uses Microsoft's natural-language engine to detect and correct grammatical errors.

The AutoSummarize facility automatically generates a summary of a document.

One user said he would be very interested in the AutoSummarize feature, but he added that he had doubts about how it would handle technical documents.

Summary judgment

"The majority of documents we generate are very technical. And if the spell checker doesn't recognize them, then I'm skeptical about how the program would generate a coherent summary without a lot of teaching," said Steven Keith, a mechanical designer at Westcor, Inc., a power supply manufacturer in San Jose, Calif., that has standardized on Office.

Word 97 is also expected to include features that make it easier for users to read documents on screen. By selecting the on-screen view, a document will be displayed in a font style and size that makes it more readable on screen.

Users also lauded features in Word 97 that streamline the process of adding graphical elements to documents. A revamped Table Drawing Tool uses a pencil and eraser metaphor to let users quickly draw and modify tables of any size.

One Word user said the new way of creating tables would make that feature more accessible to novices.

"The ability to freehand draw tables [will make] it much easier to add those elements into documents," said Brian Moura, city manager for San Carlos, Calif. "Our users [will be] more likely to make tables now that they don't have to go through the time-consuming process of using complicated pull-down menus to make and edit a table."

Other Workgroup features include version tracking and the ability to add comments that display as sticky notes over the text.

Word 97 also incorporates the Internet features that were previously offered as an add-on called Internet Assistant for Word, including the ability to embed hypertext links into documents, a World Wide Web tool bar for navigating within documents without exiting to a browser and a method for converting Word documents to Hypertext Markup Language format.

New features spice up Word 97

Letter Wizard	Automates elements in letters such as dates, addresses and sign-offs
AutoSummarize	Generates a summary of any Word document
Style Preview	Gives users the ability to view font sizes and formats for each part of the document
Enhanced Table Drawing Tool	Uses pencil and eraser metaphor to help users create tables that can easily be modified
Document Map	Lets users navigate quickly through multipage documents

Transarc addresses 'net security concerns

By Craig Stedman

Transarc Corp. this week will begin addressing Internet security concerns that are keeping users from deploying a Java-based client that connects World Wide Web browsers to its Encina transaction manager.

Transarc, a Pittsburgh-based subsidiary of IBM, plans to start beta-testing a version of its DE-Light software that supports Netscape Communications Corp.'s Secure Sockets Layer (SSL) encryption technology. General availability of DE-Light 2.0 is expected by year's end, Transarc officials said.

Transaction processing software such as Transarc's Encina/DE-Light combo could orchestrate Internet applications that are scalable and reliable, according to users and analysts. The software sits in the middle of three-tier setups, where it conducts requests from clients to servers and handles tasks such as user authentication and workload balancing.

A potential limiting factor for Transarc is its reliance on The Open Group's Distributed Computing Environment (DCE) technology, a pioneering approach to distributed computing that hasn't found widespread acceptance.

DCE hook

DE-Light specifically hooks Web browsers into DCE networks, so the choice to use it "comes down to whether you're willing to do the DCE thing," said Sally Cusack, an analyst at The Standish Group International, Inc. in Dennis, Mass. Other transaction monitor vendors, such as BEA Systems, Inc. and NCR Corp., don't require DCE at the back end.

Transarc and its rivals also have to ensure that the link between Web browser and transaction server is secure. The first release of DE-Light provided only a proprietary password scrambling mechanism that prospective customers said wouldn't provide the level of security they need.

From a security perspective, "that last mile out to the end user has been weak," said Steven Barber, a senior consultant at Fusion Systems Group, Inc. The New York consulting firm is helping to develop an application that uses DE-Light for a major financial institution, which Barber wouldn't name.

The application initially will rely on a Windows release of DE-Light that doesn't support Web browsers, Barber said. But the addition of SSL support could make it feasible to switch to the Java-based DE-Light client and thereby open up access to users on the Internet, he added.

SSL brings DE-Light's security provisions "up to commercial standards," Barber said.

Comshare

CONTINUED FROM PAGE 53

Plus also started shipping last week. Its list price is $140,000 for 25 budget holders.

• The Boost Sales Analysis was designed to let sales, marketing and financial workers cross-reference information when making decisions in their departments. It is scheduled to ship later this month. The list price isn't available.

Comshare's move into verticals is at the forefront of one of the next big trends in decision-support tools, according to several industry observers.

Brian Murphy, an analyst at The Yankee Group in Boston, said many decision-support vendors, such as Oracle Corp., SAS Institute, Inc. and Arbor Software Corp., are looking toward verticals. He said he expects other companies to make the move within the next year.

"Comshare is better positioned and is moving sooner than some horizontal technical vendors, like Information Advantage and Microstrategy," said Frank Gillett, an analyst at Hurwitz Group, Inc. in Newton, Mass. "Comshare has always been more functionally oriented. They don't have a huge head start, but they are early."

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Sales force automation has a GoldMine

By Jeffrey Gordon Angus

In sales force automation projects, the key question is always whether you should make or buy.

I think "buy" is the right answer if your organization meets certain criteria. Buy if you'd rather have your information systems group spend a little time on training instead of a lot of time creating custom code. Buy if your sales folk are reasonably competent with computers and, especially, if your company's sales cycle involves many people. And if your company falls into the latter category and you require networked sales automation, consider GoldMine Software Corp.'s latest version of GoldMine 3.2 for Windows 95 and Windows NT. It isn't perfect, but it is the best.

GoldMine's earlier releases had some unique advantages. GoldMine has always been the most network-oriented of this breed of sales automation package. It was an early provider of Internet electronic-mail integration and data synchronization.

Networking changes the way people use sales force automation. The various people responsible for serving a customer can share data. A customer service representative who contacts a prospective customer can create a record and pass it on. The appropriate sales agent can then pick it up for the sale, and the service (or technical support) department can inherit the data and would know what the customer bought and when. Sales can analyze the service data for follow-up activity.

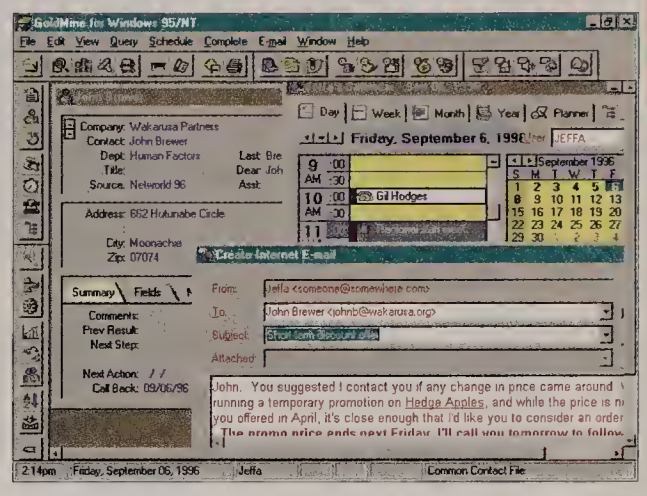
GoldMine was designed with that kind of operation in mind. Although your sales personnel could use it as a stand-alone application, there are serious competitors to GoldMine for that kind of use, most notably Symantec Corp.'s Act and Janna Systems, Inc.'s Contact 95.

The beta of Version 3.2 that I looked at has been pumped up in all of GoldMine's areas of strength, keeping it ahead of competing sales information manager products. It should be good for sales departments that follow a by-the-book sales cycle. The other shops — the hire-the-best-and-let-'em-rip shops — will find that this product's structure gets in their way.

GoldMine Software has boosted the product's Internet and other network features in a few ways, including the following:

- Users can be paged via wireless paging systems.
- Incoming E-mail is automatically attached to the sender's contact record if one exists.
- The Internet can be used as the network medium over which you synchronize contact databases.
- A "peg board" feature reports to the whole network regarding who is in and who is out. It also logs sales activities.
- The calendar includes a planner view that shows schedule blocks for multiple users.

GoldSync, the product's synchronization module, adds some conveniences for administrators: the ability to automate the synchronization process for simultaneous user sessions, and more precise security specification to control which users get which records.



GoldMine 3.2 for Windows 95 and Windows NT *will cost $295 ($895 for five units) and $99 for a competitive upgrade through Oct. 31. GoldMine Software Corp., Pacific Palisades, Calif. (800) 654-3526; www.goldminesw.com.*

Training important

GoldMine is one of those programs that are easy to use but a challenge to learn. That's because it carries an abundance of features, filling the screen with buttons and the menus with choices. This isn't a program you install and walk away from — it requires a commitment to training. And because of the importance of consistency and thoroughness in data entry throughout the sales cycle, you have to get a high rate of user buy-in for its magic to succeed.

The interface's compound nature creates some learning challenges. For example, its many features require users to memorize the location of many menu options and button symbol meanings. But I found GoldMine easy to use once I learned those things. The printed documentation is well-organized and well-written, but the online help could use more graphics to illustrate the subject buttons and dialog boxes. And I fervently hope the shipped product will include a structured tutorial based on sample data.

GoldMine can make you a hero if you can garner enough buy-in from the various departments that could use the software. It will require getting people over the learning hump with training, but the end-user interface issues should be relatively minor once users have gained some experience.

Angus is a systems analyst at The Data Works Ltd. in Seattle.

Users get more year 2000 products

By Lisa Picarille

Users now have a broader selection of software to help them analyze, prepare and implement a strategy to prepare for the rapidly approaching millennium.

At the Year 2000 Conference and Expo in San Francisco last month, several vendors introduced tools and utilities aimed at jump-starting users' year 2000 conversion efforts.

William Ulrich, president of Tactical Strategy Group, Inc. in Soquel, Calif., estimated that users will spend 40% of their year 2000 conversion budgets on planning and analysis, 10% on actual changes to the code and 50% on validating the systems.

Software vendors are trying to cash in on those needs by offering packages that aim to take care of all aspects of the conversion — from analysis to validation and testing.

Announcements at the show included the following:

- **Computer Horizons Corp.** in Mountain Lakes, N.J., added three tools to its year 2000 family for analysis and sequencing strategy, among other functions. Pricing for the products depends on the size of the conversion and include Computer Horizons' service fees as a project consultant.
- **Compuware Corp.**'s Production 2000 also aims to provide users with a set of conversion tools to perform a variety of tasks. Tools from the Farmington Hills, Mich., company let users perform code analysis, date conversion and testing, among other things.
- **HCL James Martin, Inc.** in Fairfax, Va., has released an updated version of its TSRM (The System Redevelopment Methodology). It includes new data management, library management, systems analysis, date reset and testing features.
- **Software Emancipation Technology, Inc.** in Lexington, Mass., has released Discover Y2K, tools for users who need date compliance within programs created using the C and C++ programming languages.

Time to get started

One user said the task of converting to the year 2000 is overwhelming but absolutely necessary and needs to be done now.

"The main thing I've found is that people just haven't gotten started," said Janice Vandenbrink, a vice president at Visa International in San Mateo, Calif., who is overseeing Visa's Global Year 2000 Conversion.

Vandenbrink said Visa began its conversion effort three years ago. She estimates 1,900 to 2,400 man-months of work will be needed to complete the project. Visa expects to complete its year 2000 conversion by 1998 — reserving 1999 for its members to test systems.

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Users throw cache at network delays, **64**

The Enterprise Network

Directory services duel

By Laura DiDio

Enterprise directory services capability: Novell, Inc.'s NetWare 4.1 and IntranetWare have it; Microsoft Corp.'s Windows NT Server doesn't — and won't for at least a year.

The result, said users and analysts, is many businesses are deploying both NetWare and NT Server but using them for different things.

Network software update

Novell Directory Services (NDS) is the centerpiece of the NetWare 4.1 architecture and a key component of Novell's fledgling IntranetWare offering.

It is an extended database that contains information on all users, network objects and devices throughout the enterprise. NDS is useful in large, geographically dispersed networks because it gives the network administrator a centralized view of every "branch on the tree," said Steve Pierleoni, network administrator at KPMG Information Systems Services Department (formerly Peat Marwick) in London.

KPMG, a Big Six accounting firm, has decided to allow individual locations to chart their own networking course. Pierleoni's group chose NetWare over NT Server specifically for NDS and because it was familiar with NetWare file and print services, he said.

A study last year by Gartner Group, Inc., a Stamford, Conn., consultancy, found that the enterprisewide management features of NDS can save more than $900,000 over three years for those who run 30 servers.

By contrast, Microsoft's NT Server lacks a full-blown enterprise directory service. NT's domain name services structure provides limited directory services, but only for users and devices in specific subsets of the network. To access resources outside a particular domain, the administrator must set up a series of information-sharing trust relationships among the domains, which can be time-consuming and unwieldy to administer, said Bob Sakakeeny, an analyst at Aberdeen Group, Inc. in Boston.

To appease critics and restive users, Microsoft developed and has begun beta-testing its Distributed File System (DFS) to offer some interim directory services functions. Microsoft also is readying a management utility, code-named Slate, which will provide the management interface between the directories and user account information.

So far, the fallout from the di-

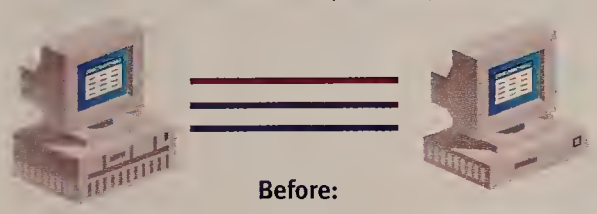
Directory services, *page 64*

Operating systems rivals

	Novell	Microsoft
TODAY	Novell Directory Services (NDS) is a full enterprise-directory service that lets users share and access resources and allows administrators to centrally make moves, adds and changes.	Windows NT uses a domain directory structure that divides the enterprise into subsets that require more local administration.
IN BETA	Novell is working on an integration utility for Windows NT, code-named Tabasco. It synchronizes user data between Novell's NDS and Microsoft's Windows NT Server directories. Tabasco will ship by year's end.	The Distributed File System (DFS) is an interim step to alleviate directory limitations until Windows NT 5.0, code-named Cairo, ships in the second half of next year. DFS lets administrators create a single directory tree and allows users to easily find, browse and access information in the tree.
FUTURE	By mid-1997, Novell promises NDS will be a full object-oriented directory database. Novell will also ship NDS on Windows NT with full integration capabilities next summer.	Cairo will give Windows NT Server users an object-oriented enterprise directory that is fully X.500-compliant. Microsoft is also developing a management utility, code-named Slate, that will deliver centralized directory capabilities and improved user administration.

Feature saves money by 'smartening up' ISDN technology

Bandwidth Allocation Control Protocol (BACP)



Before:

If a file is sent between two devices over one ISDN channel and more bandwidth is needed, both devices call up an additional channel, creating a total of three channels.

After:

If a file is sent between two devices over one ISDN channel, the two devices communicate using BACP and together open one channel, not two.

Benefit:

Two channels are used instead of three, and the user saves money.

Bandwidth Allocation Control Protocol uses channels as needed

By Bob Wallace

"Can we talk?"

Sure, but if we are talking over an ISDN connection, we may be wasting a lot of money.

The basic concept behind wide-area networking is to use the smallest number of channels possible for a given traffic load, expanding the number of channels as needed. But Integrated Services Digital Network (ISDN) technology currently isn't smart enough to avoid adding or dropping channels at inappropriate times.

But that's changing as networking vendors rush to support a feature that will enable devices to coordinate such moves.

Bandwidth Allocation Control Protocol (BACP) will save users money by having their equipment add and drop channels only when needed.

Currently, devices at both ends of an ISDN connection may call up an additional link at the same time, which results in two new channels when only one is needed. Both ends often respond to the conflict by eliminating their respective extra channels, leaving users back where they started.

"That's an expensive predicament, since carriers charge users the most for the first minute of a call. So if two extra channels are called up for 10 seconds [each], the user is billed for the full first minute on each one," explained Jeffrey Fritz, a telecommunications engineer at West Virginia University in Morgantown, an ISDN user. "With BACP, both sides know what the other is doing."

Most carriers charge about 30 cents for the first minute of an ISDN call, said Fritz, who is a longtime member of the National ISDN Users Forum and has authored books on ISDN. West Virginia University was among the first users in the U.S. to implement ISDN widely.

BACP can also be used by a device at one end of an ISDN line to tell the device at the other end that it is establishing a voice call and not to send any data over that channel. That is increasingly important as more users connect PCs and phones to their ISDN lines.

Remote use

The feature also promises big benefits when ISDN lines are used with remote access servers to support far-flung offices, telecommuters and home-based workers.

Without BACP, if a company uses more than one remote access server, there is no guarantee that when a channel is added it will connect to the same server used by the first channel. Servers use different telephone numbers.

"The result is that the two channels can't be pulled together for use as one larger link," explained Bob Larribeau, director of the 1,000-company California ISDN Users Group in San Francisco. "With BACP, the remote device asks the server for an additional channel,

'Smartening' ISDN, *page 64*

Users throwing cache at network delays

By Patrick Dryden

By 2000, networks won't be able to function properly without the help of software that caches data between users and the servers at the other end of a local or remote connection.

That was one projection about the future of network computing made in a keynote speech by Eric Schmidt, chief technology officer at Sun Microsystems, Inc., at Networld/Interop '96 last month.

Cache software

Users need to store frequently used files or streams of data close to where they are needed to ensure adequate performance. That can also help managers put off bandwidth upgrades.

Attendees discussed the merits of adding cache space to devices such as switches and network adapter cards to reduce the load on servers and overcome the often jerky delivery of multimedia streams. 3Com Corp. demonstrated a branch-office hub that caches requests from workgroup members to reduce their wait for files fetched from across a slow wide-area network link.

But that future is now at some organizations where network managers have already adopted cache tools. They credit that technology with boosting network performance without costly and complex bandwidth upgrades (see chart).

For example, budget limitations prompted Bart Poulsen, manager of the Washington state employment security department, to test a cache in stations and at a server for a few small offices throughout the department's western region.

His users had complained about slow access over their 56K bit/sec. frame-relay connection to client data at the state office in Bremerton. But upgrading the link required too much time and money, Poulsen said. So he tried Shared LAN Cache software from Measurement Techniques, Inc. in Stoughton, Mass.

"After the first hour, the staff out there faxed me and pleaded to keep this demo because it works," Poulsen said. "That's a good testament from a rural staff that doesn't know diddly about networks."

Little time to spare

But Poulsen's staff knew the frustration of waiting.

Using a stopwatch, the staff recorded delays of 45 seconds to change screens from the central client management database. But when the workgroup's server cached frequently requested files, the same tasks dropped to between five and nine seconds, Poulsen said.

At three small water department field offices for the city of Newport News, Va., users complained about delays accessing a single central server via Integrated Services Digital Network (ISDN) lines, said Vickie Osborne, systems analyst for the city.

"ISDN is slower than the network, so I configured a disk cache on the individual PCs to hold applications and repetitive reports," Osborne said.

Instead of coming back to the main server, those users fetch almost all files locally. A project management program that took five minutes to load over ISDN now comes from the station's cache in 45 seconds, Osborne said.

Setting up a cache at each station also improves response time for program and data files that are frequently requested from a local server, although the results aren't as dramatic, users said.

Seeking to boost LAN performance, Boston law firm Palmer & Dodge tried station caching because "the concept sounded easier than an infrastructure upgrade," said Carl Easton, director of information technology.

Now, 400 users take less than 10 seconds to load programs that used to take 30 to 35 seconds to retrieve from their servers, according to Easton.

Cache on the line

How cache software works:

LOCAL DELIVERY	Frequently used files load from the station's cache instead of from the LAN or remote server.
DISK, NOT MEMORY	Some operating systems hold user data in memory, which clears when stations shut down or reboot. A disk cache keeps files ready from day to day.
INTELLIGENCE NEEDED	Cache control is necessary to ensure a local file matches the latest version on the server.

Directory services duel

CONTINUED FROM PAGE 63

rectory services wars has gone largely unnoticed, at least in terms of market share. NT Server is still gaining customers, and NetWare is holding its own, observed Eric Hindin, an analyst at The Yankee Group in Boston.

But Microsoft and Novell are girding for future battles. Novell, with the release of NetWare 4.11 last month, made NDS easier to use. The Orem, Utah, company is also gearing up to deliver Tabasco, agent software that will reside on NT Server and synchronize user information on NT networks with the NDS directory on NetWare servers. Tabasco is due out by year's end. Novell is also slated to ship NDS on NT Server by mid-1997, several months ahead of Cairo.

But so far, there has been no major uproar from Microsoft users about the dearth of full-blown directory services capabilities because NT Server hasn't been widely adopted at the enterprise level, Sakakeeny said.

Indeed, some staunch NT Server loyalists such as Steve Sommer, vice president of MIS at Hughes Hubbard & Reed, a New York-based law firm, profess not to care that Cairo is still a year away from shipping.

"I find the domain structure just as comprehensive as NDS, and I think it gives us tighter security," Sommer said.

'Smartening' ISDN technology

CONTINUED FROM PAGE 63

and the server sends back the telephone number of the first one, so the channels can be combined."

Without BACP, it may be a while before the ISDN device figures that out and drops the extra channel. In the meantime, the user could rack up heavy per-minute usage charges on the second channel.

"Having both channels up at the same time can be much too [illegible] for many users at 28 or 56 cents per minute," Friel said.

Larribeau, an independent consultant at Larribeau Associates in San Francisco, said a group of vendors submitted a draft specification to the Internet Engineering Task Force earlier this year, and approval is imminent.

"I expect to see BACP support across products from a broad group of users early next year," Larribeau said.

3Com Corp. and Gandalf Canada Ltd. will support BACP in some of their products within a month. Remote access powerhouse Shiva Corp. will support BACP after the specification is finalized. Bay Networks, Inc. will support BACP early next year. Cisco Systems, Inc. will support it in the first half of next year.

Briefs

Innosoft sees light

Innosoft International, Inc., a maker of electronic-mail integration software, is moving away from its dependence on Digital Equipment Corp. platforms and is shipping a Sun Microsystems, Inc. Solaris version of its PMDF E-mail Interconnect 5.1. The West Covina, Calif., firm has also added support for E-mail delivery notifications, a feature missing from many Internet-standard E-mail products. Prices range from $6,000 to $15,000.

Checking service

Network General Corp. has launched a tool to help administrators check the quality of service provided by their networks and systems. Service Level Manager gathers statistics from diverse sources and translates that data into a single, simple view of performance. This information helps managers profile availability, both immediate and historical. And it gives troubleshooters a place to start. The Menlo Park, Calif., vendor plans to ship the product by year's end. It will cost $4,995.

Cheaper monitor

Technically Elite, Inc. has launched a Remote Monitoring probe for watching backbone traffic. The FDDIMeter 3600 costs $7,495, at least $3,000 less than competing products for monitoring Fiber Distributed Data Interface (FDDI) connections, according to officials at the San Jose, Calif., company. The probe is available now.

NetWare tool coming

Managers of **Novell, Inc.** servers can download and test a tool for centrally managing all the NetWare Loadable Module (NLM) applications loaded on servers throughout a network. **NetPro Computing, Inc.** in Scottsdale, Ariz., plans to ship Config Central this month for $499 to handle 10 NetWare 3.12 and 4.1 servers. A beta version is available at www.netpro.com. Config Central snaps into Novell's ManageWise and NWAdmin consoles so a manager can compare servers with reference configurations, instead of manually checking NLMs server by server, to ease monitoring and troubleshooting.

GroupWise to channel

Novell wants to expand third-party support for its GroupWise 5 messaging system and in the process is giving users much more flexibility installing and customizing the software. GroupWise development will take a prominent place alongside NetWare at Novell's DeveloperNet conference in December, company officials said.

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#1 IN DATA WAREHOUSING

NCR

Web becoming choice for network management

By Patrick Dryden

Network managers who seek broader access to status and performance information via the World Wide Web will face a wide range of prices for that capability during the next year.

Take three network performance monitoring vendors, for example. Start-up Kaspia Systems, Inc. builds Web reporting in to its basic product. Frontier Software Development, Inc. will add a Web interface to its server in November for $2,495. And Concord Communications, Inc. charges $10,000 for that option but is rethinking that price.

Ultimately, most vendors expect free, standardized browsers to replace costly and proprietary consoles for most — or even all — management tasks.

"Web features can help sell management products by making them more useful, like eliminating location as a restriction, so we can check networks and systems from home or anywhere on campus," said Tom Shoop, director of systems engineering at Western Union Information Services in Paramus, N.J. "But they should be part of a basic upgrade."

No more special consoles

Several management vendors told *Computerworld* they expect to offer free Web delivery of reports that currently require a Unix console for viewing or printing.

For example, Bay Networks, Inc. will add free Web capabilities to its Optivity management software in November, said Tim Riley, network management product marketing director at the company.

"The goal is to get rid of current consoles during the next one to two years," Riley said.

Cabletron Systems, Inc. includes free Web reporting in Version 4.0 of its Spectrum network management platform but charges for more interactive options such as an alarm monitor.

Hewlett-Packard Co. probably won't charge for read-only Web access to its OpenView Network Node Manager, but pricing for that planned enhancement hasn't been determined.

"The Web offers vendors development salvation," said Brian Burba, a management analyst at International Data Corp. in Framingham, Mass.

Vendors currently must port, test and support a management application in as many as 50 configurations of operating system and management frameworks, said Jim Turner, manager of network management partnerships at Cisco Systems, Inc. in San Jose, Calif.

The list includes various types and versions of Unix, other operating systems and versions of the major network and systems management frameworks. Cutting that list means users will get new features quicker and support will improve, vendors said.

Cisco will turn on Web capabilities already inside the Internetwork Operating System or its products through free add-on reporting services, Turner said.

Next year, all Cisco's utilities will be "Webified" and will be able to guide users through management tasks via hyperlinks and applets on their browsers, he said.

"We'd pay for Web capabilities like helpful applets and interaction with a powerful management server," said Charles Hebert, manager of software services support at Turner Broadcasting System, Inc. in Atlanta.

But buying licenses for tools will get "interesting," Hebert said, "because you could wind up supporting an unlimited number of users through the Web."

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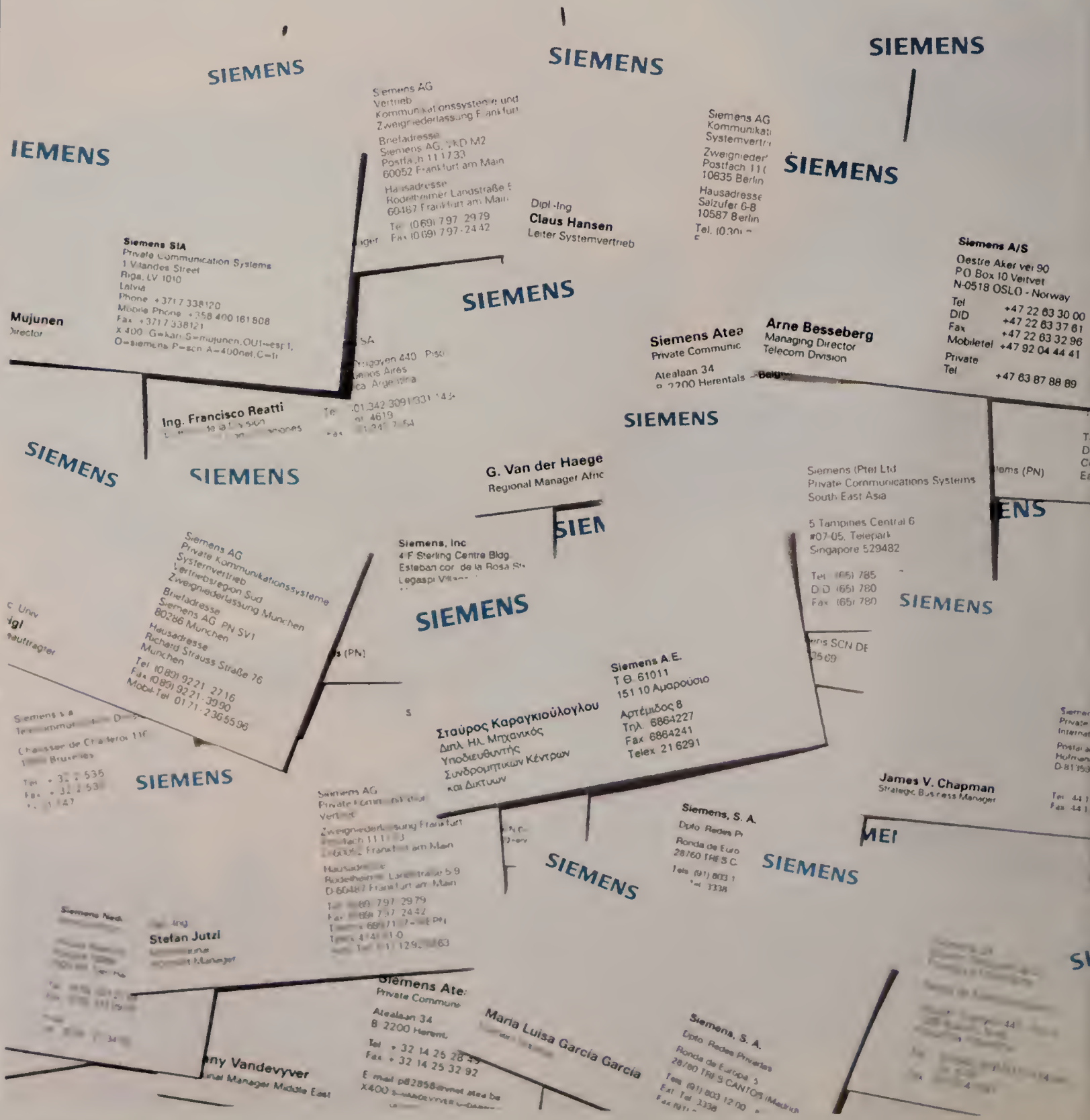


Tool manages multiple flavors of Unix

By Laura DiDio

At this week's Unix Expo in New York, Enlighten Software Solutions, Inc. will showcase the latest version of its management software that eases administration of corporate intranets running multiple Unix operating systems.

Release 2.0 of the Unix/Distributed Systems Manager (DSM) increases the functionality of its predecessor and adds administration and configuration functions. Instead of being relegated to text-based management facilities, administrators now have point-and-click access to a variety of tasks. Those include network and systems management, event tracking, printer management, configuration of user accounts, disk and file management, backup scheduling and security auditing.

Network managers can also use Unix/DSM to group their resources in a variety of ways, such as by application category or geographic location.

Additionally, administrators can grant various levels of permissions to users and customize the functionality of the graphical user interface (GUI) as necessary. The product also includes the Enterprise Management Database, a centralized database that keeps track of events such as backups, file system snapshots and performance data.

Enlighten users

Enlighten's Unix/DSM 2.0 consists of these components:

- A user interface that includes a status map of network events
- A Group Management Server that houses the Enterprise Management Database and Programmable Event Processor
- Distributed Systems Agents, including administrative and events log agents

PRICE

$1,000 (single workstation)
$30,000 (10-node configuration)

All of those functions work across a variety of Unix operating system platforms, including Sun Microsystems, Inc.'s SunOS and Solaris, IBM's AIX, Hewlett-Packard Co.'s HP-UX, SCO, Inc.'s SCO Unix and Silicon Graphics, Inc.'s Irix.

Unix unity

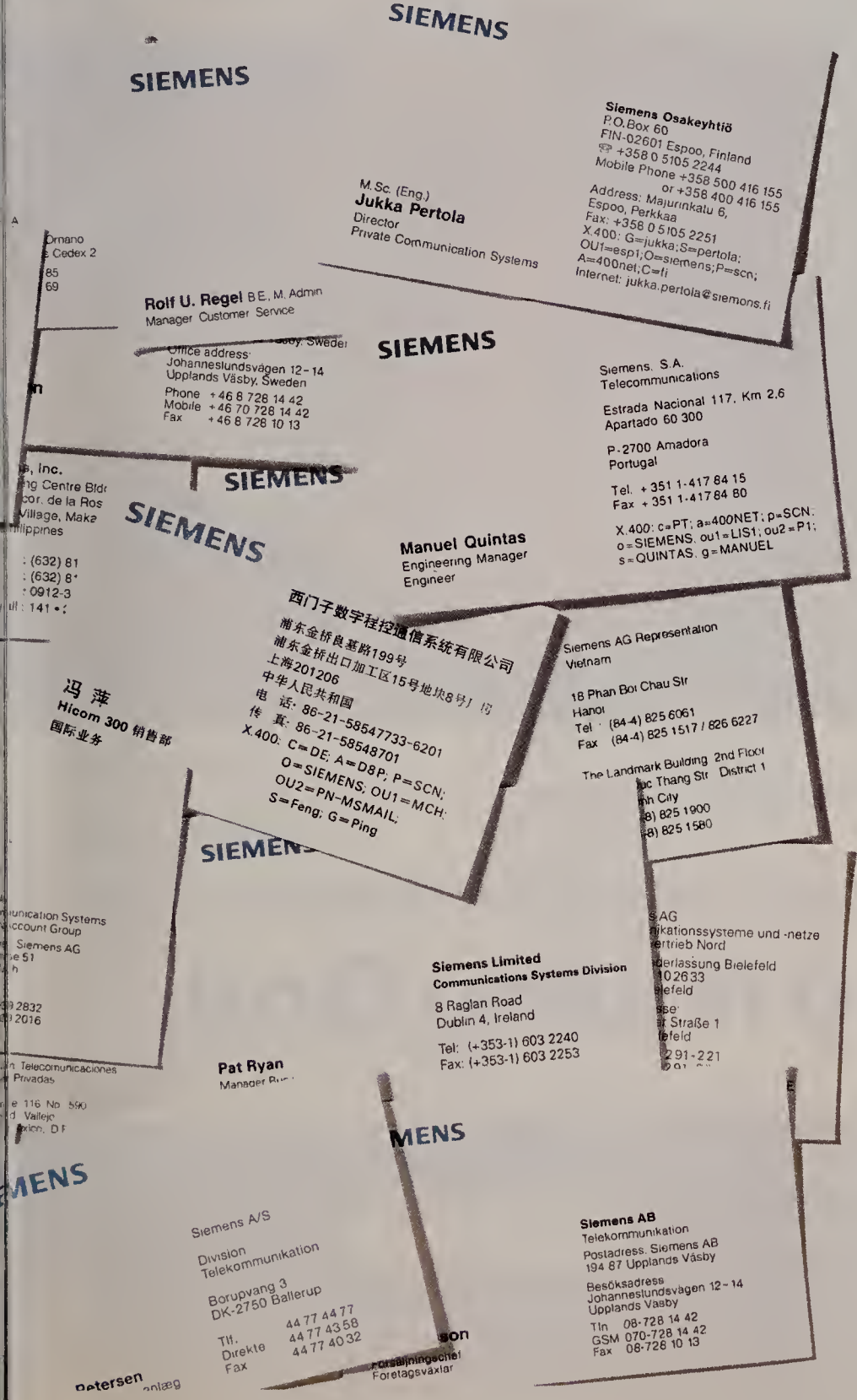
Users and analysts said Enlighten's Unix/DSM 2.0 package can help eliminate many of the inconsistencies that crop up in the management of multiple flavors of Unix.

One network administrator at a large Midwest insurance firm, who requested anonymity, agreed. "This type of functionality is ideal for our organization since we have several different flavors of Unix. Having one package to manage them is a real boon and will make life easier as we begin to deploy corporate intranets," he said.

Enlighten's Unix/DSM 2.0 GUI also incorporates a Status Map, which provides a detailed account of any network alarms, such as outages. The Status Map will indicate the severity of the network problem with colored flashing icons. Host overviews can also be captured to allow the administrator to instantly check on the health and status of a specific Unix hosts.

The Unix/DSM 2.0 management package is shipping.

give us a call.



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On a quest for the perfect tattoo

I immediately found an ideal viper motif on the Tattoo Resource Page, yet I was curious what Maximillian's On-Line Tattoo Parlor might suggest – which actually expanded my thinking into the pterodactyl realm. Intrigued, I went on to peruse the Design Your Own Tattoo Page and – influenced by a well-stenciled midriff from the Bowery on the History of the Tattoo Web Site – came up with something no one had done before. In fact, everyone on the Tattoo Talk chat page was going ga-ga over it. So I started thinking tattoos might be my calling, when I scrolled down to a site for the Ministry of the Tattoo in Monterey, where the entire parish is visibly tattooed. Just one potluck dinner and

I ended up finding God.

Picture and sound searches. City Guide. Bonus rewards. This is no Web index.
This is the all new Lycos at www.lycos.com. Lycos. Where will Go Get It get you?
Click our GO GET IT button and find something that will etch itself into your memory forever.
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User/vendor group develops "extranet" prototype, 77

The Internet

SiteSweeper helps clean up Web management

Site Technologies' SiteSweeper generates nine reports that show variables, including Web page size and malfunctioning links, to help IS keep intranets running smoothly.

Page Summary *shows total download size, data last modified and number of links to and from the page.*

Catalog of Images *shows miniversions of each picture on a page along with the size of the images.*

Pages with Bad Links *lists the reasons certain hyperlinks won't work.*

By Kim S. Nash

When 30 secretaries with no programming experience begin to post content to a company intranet, technical errors are bound to appear. Just ask Donald Peek.

Peek is technical webmaster at Olin Chemicals Corp. in Charleston, Tenn. He supports 30 administrative assistants who maintain intranet pages for their respective departments. "I don't have time to do things like check individual links on individual pages or find incorrect HTML tags," Peek said. His division's intranet has 750 pages and 850 users.

Peek sought help from SiteSweeper, a new management utility from Site Technologies, Inc. in Durham, N.C.

The product was designed to perform intranet-specific functions that traditional network management tools don't do. It costs $299.

Users said SiteSweeper satisfied management needs better than other products, but the market still lacks a killer maintenance utility.

World Wide Web management tools started to appear this summer and are becoming more sophisticated [CW, June 24]. But many intranet management tasks, such as granting users access rights and ensuring that Web pages conform to corporate templates, are still done manually.

Information systems departments need Web management vendors to roll several features into a single product, observers said. Some of these features include the following:

- The ability to prioritize intranet traffic.
- The ability to produce a map to show Web site structure.
- The ability to integrate different user ac-

SiteSweeper, *page 77*

SiteSweeper *measures each Web page to help IS minimize large pages*

'net NetWare

Some NetWare users are wary of the Internet.

That's because connecting Novell, Inc.'s operating system to the Internet isn't as simple as one might think. NetWare uses the IPX networking protocol and doesn't speak the Internet's TCP/IP protocol well.

- Products have sprung up to help bridge the gap, including software from **Quarterdeck** at **arachnid.qdeck.com/qdeck/products/iwarelite/**, **SphereLink Communications** at **www.spherelink.com/** and **Process Software** at **www2.process.com**.
- Process Software has posted a white paper that, in part, talks about the problems of linking NetWare networks to intranet applications at **www2.process.com/intranets/wp2.htp**. The paper is useful because it isn't entirely a guise for selling Process Software products.
- **Novell**, of course, offers its own answer in the form of the NetWare Web Server. This product bundle includes NetWare, a Web server and a gateway between IPX and TCP/IP networks. See Novell's product details at **corp.novell.com/market/jun96/bg34610.htm**. Or read *Computerworld's* article on Novell's Internet strategy at **www.computerworld.com/960826SL35wow.html**.
- To chat with colleagues in the same pickle, try *Intranet Design Magazine* or *The Intranet Journal* at **www.innergy.com** or **www.brill.com/intranet/**, respectively. They are Web sites for intranet managers and webmasters; search their archives for NetWare-specific threads.

– Kim S. Nash

Tracking service helps companies get a handle on Internet problems

By Mitch Wagner

Like any company doing business on the World Wide Web, the New York Times Electronic Media Co. occasionally gets complaints from consumers who can't get into its site.

"We need to be available to all our users all the time and at the fastest speed possible," said Ben Graboske, director of systems and software design at the company.

The complaint sets off a hectic search for the cause of the problem. The company scours its servers and network connections looking for bugs and downed links. Often, that search is a waste of time. The problem turns out to be hundreds of miles away: a bottleneck on a segment of the Internet over which the company has no control.

The Times is testing a service from Net.Genesis Corp. in Cambridge, Mass., that Graboske said he hopes will help track down Internet problems.

Net.Sweep, a service due to be generally available next month, was designed to help webmasters keep track of how their Web sites look to users who access the pages from across the continental U.S.

Five sites

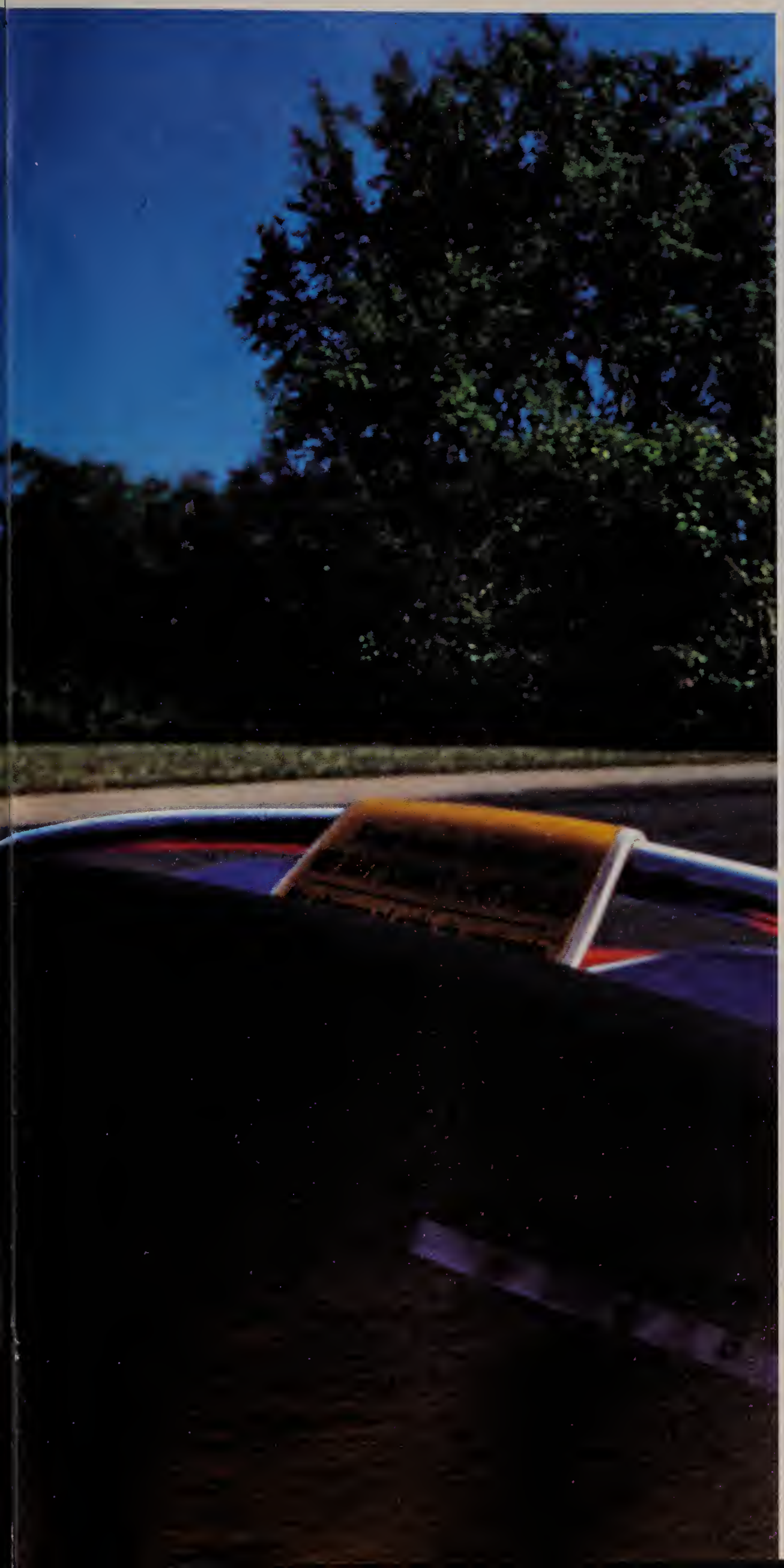
Net.Genesis will install servers in five locations nationwide and will equip the servers with 28.8K bit/sec. dial-up modems and T1 lines. Software agents running on those servers will regularly access the Web sites of people who subscribe to the service and report back on how quickly the pages were downloaded and whether the agents encountered any problems accessing the sites.

The service was designed to address users' concerns that Internet brownouts and slowdowns make their pages inaccessible to visitors. It is aimed primarily at big companies that offer consumer-oriented sites that must be accessible from all over the Internet and at a wide variety of speeds.

Tracking service, *page 77*

The New York Times *hopes Net.Sweep from Net.Genesis will track down Internet problems that affect its site*

Remember the thrill you got the first time you were in complete control?



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New Products

Hewlett-Packard Co. has announced HP Virtual Vault, part of its Praesidium enterprise-security framework.

According to the Palo Alto, Calif., company, the software grants internal and external clients World Wide Web access to critical applications while safeguarding proprietary information.

Pricing starts at $75,000 for a single copy.

▶ *Hewlett-Packard*
(415) 857-1501
www.hp.com

SoftQuad International, Inc. has announced the HotMetal Intranet Publisher (HIP) for building corporate intranets.

According to the Toronto company, HIP uses HotMetal Pro, a Hypertext Markup Language content creation tool; a Web management interface; and a browser add-on for Netscape Communications Corp.'s Navigator and Microsoft Corp.'s Internet Explorer.

Pricing starts at less than $500.

▶ *SoftQuad International*
(416) 544-9000
www.softquad.com

Cycle Software has announced LiveData, intranet software to help corporations put real-time, continuous data on the World Wide Web.

According to the Quincy, Mass., company, LiveData is active server technology that works with Microsoft Corp.'s ActiveX or Sun Microsystems, Inc.'s Java to provide information for the Web.

Pricing starts at $2,499.

▶ *Cycle Software*
(617) 770-9594
www.livedata.com

Micom Communications Corp. has announced V/IP, a telephone/fax gateway product to create a voice/fax network atop an enterprise Internet Protocol data network.

According to the Simi Valley, Calif., company, V/IP consists of analog and digital voice interface cards that feature one or two voice/fax channels. The interface card was designed to work with any phone, fax, private branch exchange, key system, Centrex or central office trunk.

Pricing for V/IP starts at $770 per voice/fax channel.

▶ *Micom Communications*
(805) 583-8600
www.micom.com

Network-1 Software and Technology, Inc. has announced that its FireWall/Plus multiprotocol firewall product now supports Xing Technology Corp.'s StreamWorks 2.0.

According to the New York company, FireWall/Plus is the only multilevel, multiprotocol firewall to support live Internet broadcasting. It protects audio and video transmissions from hackers.

FireWall/Plus has security features for Internet, intranet and LAN-to-LAN network environments. It filters TCP/IP and supports more than 388 protocol suites to protect against internal and external security threats.

Pricing for FireWall/Plus starts at $3,995.

▶ *Network-1 Software and Technology*
(212) 293-3068
www.network-1.com

Creative Labs, Inc. has released Interneted Sound Blaster, a line of audio cards bundled with Internet software from Microsoft Corp., NetSpeak Corp. and Progressive Networks, Inc.

According to the Milpitas, Calif., firm, the Interneted Sound Blaster line works with Microsoft's Internet Explorer for World Wide Web browsing; with NetSpeak's Creative WebPhone for toll-free Internet telephone calls; and with Progressive Networks' RealAudio player for real-time audio streaming over the 'net.

Pricing starts at $99.

▶ *Creative Labs*
(408) 428-2394
www.creativelabs.com

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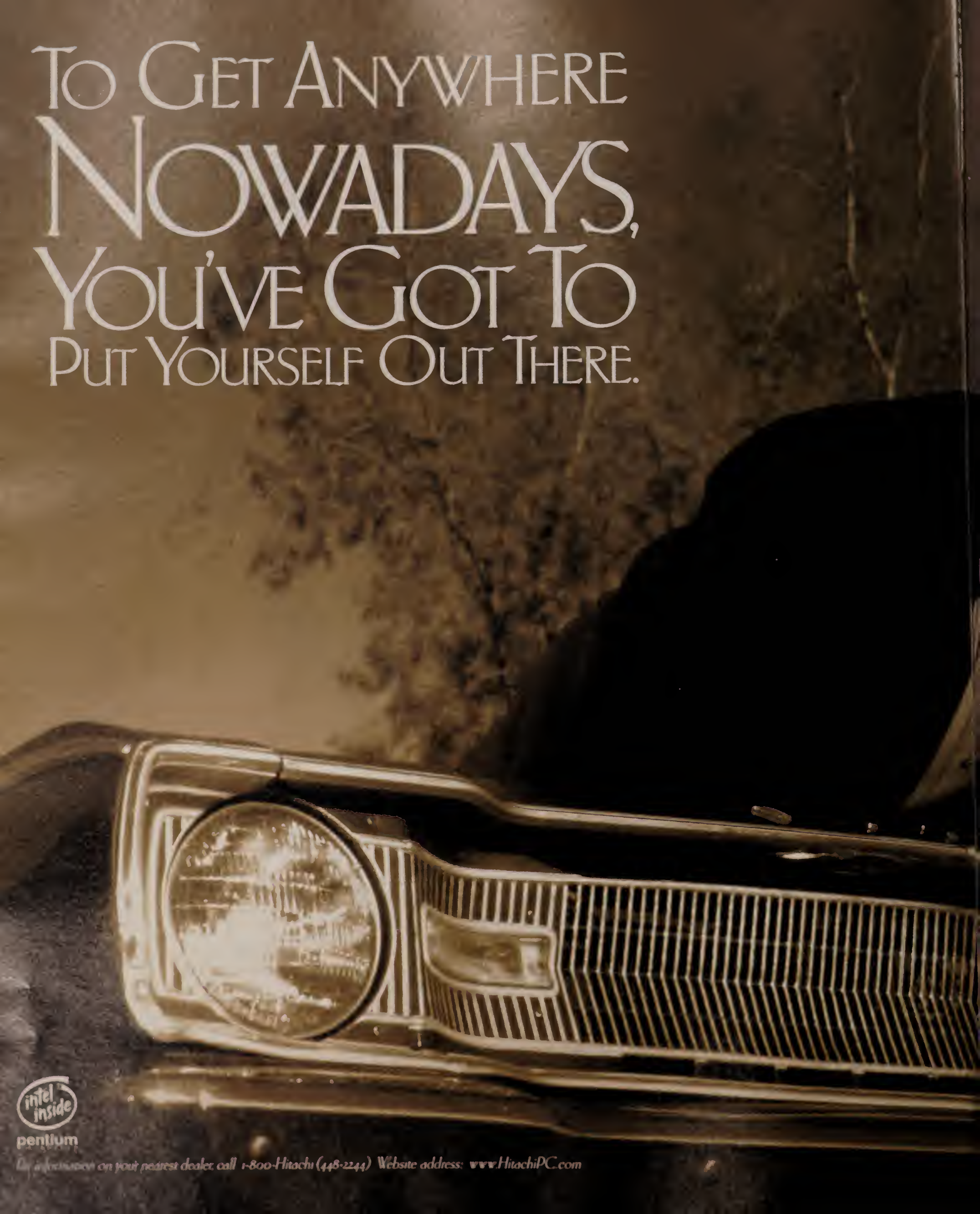
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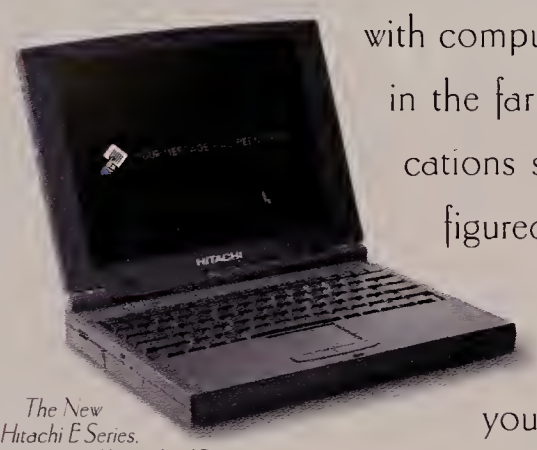

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[1] Strategic Network Consulting, Harvard University Test Lab (March 1996)

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Extranet aims to reduce factory costs

Firms in supply chain collaborate via private 'net

By Gary H. Anthes

A group of 15 user and vendor companies is developing a prototype "extranet" that will let manufacturers, their suppliers and customers work together online anywhere in the world.

The project will set up a virtual private network, or extranet, on the Internet. It will allow participating companies to collaborate easily and confidentially on manufacturing matters such as customer requests for product enhancements. The idea is to speed decision-making while using technologies that are more interoperable and less costly than those employed on traditional private networks.

The project is being led by InfoTest International (www.infotest.com), a private consortium devoted to developing practical Internet test applications.

The nationwide technology trial will combine Internet technologies such as the World Wide Web with computer-assisted design and manufacturing, product data management, electronic data interchange, videoconferencing and other more traditional technology.

InfoTest's Troy Eid: *Virtual private networks over the 'net should cost 30% less than using phone company leased lines*

"These applications are used by U.S. manufacturers today, but typically work only with proprietary systems," said Troy Eid, executive director of InfoTest in Denver. "This closed systems environment makes it tough to link the entire product chain — manufacturers, suppliers, dealers, off-site contractors and customers."

Trial run

Eid said the project, called Enhanced Product Realization (EPR), will set up a real-world system for "virtual product design and supply chain management" and study the costs and benefits of such a system. During the 18-month trial, EPR project team members will assume the roles of various parties such as manufacturers, product suppliers and customers.

EPR is intended to prove that the Internet can greatly shrink product time to market and customer response times. Eid said virtual private networks over the Internet should cost about 30% less than using telephone company leased lines.

Eid said robotics and other techniques have brought agility to the factory floor. Extranets can extend that agility to the entire product supply chain, he said.

EPR will try to solve a business problem set forth by team member Caterpillar, Inc. in Peoria, Ill.: how to shrink the time it takes to respond to a customer request for a product modification from several weeks to as few as five days.

Extranet technology will be helpful but not sufficient in meeting that goal, said Jim Hooker, an engineering consultant at Caterpillar.

"Our take on this project is that it is not technology that will solve our problems; it is process," he said.

EPR will use the Distributed Computing Environment security standards and router-based Internet Protocol encryption from Bay Networks, Inc., said Steve Batsell, network research group leader at Oak Ridge National Laboratory, an EPR team member in Oak Ridge, Tenn. The routers will use the resource reservation protocol being developed by the Internet Engineering Task Force.

The reservation protocol will allow Internet service providers to offer users guaranteed bandwidth, Batsell said.

SiteSweeper helps clean up

CONTINUED FROM PAGE 69

cess directories, such as those in Windows NT and Novell, Inc.'s NetWare.

- The ability to fish out broken hyperlinks.

SiteSweeper does some of that, which pleases early users. It stands out, they said, because of two features in particular: The product can detect broken hyperlinks and calculate the size of a page.

Knowing how big Web pages or sets of Web pages are is key to helping IS control intranet growth, said Randy Kindig, an information engineer at Cinergy Corp.

The Plainfield, Ind., power company recommends to its users that each Web page be no bigger than 30K to 40K bytes. "It's not a hard and fast rule, but we have a lot of people who dial in at 14.4 bit/sec. from home," he said.

SiteSweeper also roots out dead Hypertext Markup Language (HTML) links automatically, then sends a list of them to a designated Web site administrator.

"That's the report I just love," Peek said.

Some development tool kits also include Web site management utilities. For example, Monterey, Calif.-based DeltaPoint, Inc. last week announced a combination product called QuickSite Developers Edition. The product is a graphical Web development tool that lets webmasters monitor user activity at the sites they build.

Netscape Communications Corp. and Microsoft Corp. are also working on Web management products.

Netscape, for example, plans to build a Simple Network Management Protocol agent so systems management suites — Hewlett-Packard Co.'s OpenView, SunSoft, Inc.'s SunNet Manager and others — can monitor Web servers and other network devices. But that won't happen until early next year.

Tracking Internet problems

CONTINUED FROM PAGE 69

Net.Genesis isn't alone in cooking up Web throughput measurement services. Keynote Systems, Inc. in San Mateo, Calif., plans to announce a competitive service Oct. 28, but it wouldn't release further information.

Many companies offer services that simply check a Web site and notify users if the site is down or inaccessible. Among these is Red Alert from the Internet Resources Group in Plano, Texas (www.redalert.com). Prices start at $19.95 per month per uniform resource locator.

Net.Sweep was designed to help webmasters monitor how their Web sites look to users who access the pages from across the U.S.

Close watch

The Net.Genesis servers will monitor connections over multiple service providers. They will have connections to major Internet service providers such as UUnet Technologies, Inc.; PSInet, Inc.; AT&T Corp.; Netcom On-Line Communication Services, Inc., plus at least one proprietary online service — America Online or CompuServe. "It simulates everything a browser does. It connects to a page and downloads all the elements on that page. And when they're all downloaded, that's the end of the retrieval time," said Rob Lucier, product manager for Net.Sweep.

Net.Sweep will go into limited testing in November and general availability by year's end. Prices will range from $100 per month for users who want to receive simple, weekly reports to up to $10,000 per month for users who want continuous, detailed reports of their pages' availability.

Net.Genesis specializes in tools that measure Web site performance.

The company also makes a traffic analysis tool to measure and analyze the number of visits a Web site receives.

Graboske said he hopes the service will eventually evolve into a ratings service that compares availability and throughput rates of various Internet service providers. Net.Genesis officials said they are considering developing such a service.

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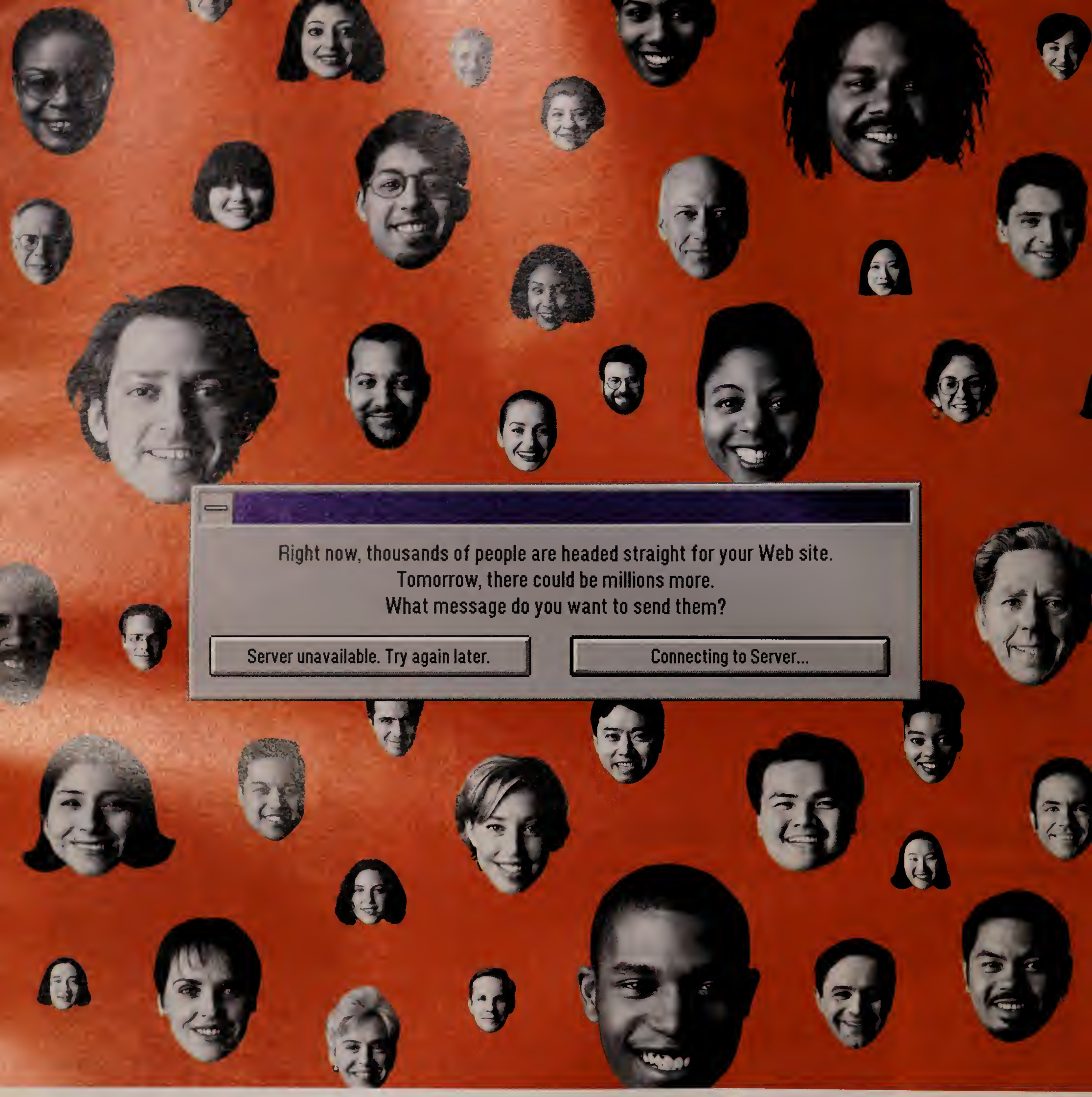

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Techno MBAs pay off

Degree mixing business, IS skills in demand

By Julia King

Information systems professionals frequently complain that top business managers have a limited grasp on technology.

But that may be changing as more companies hire so-called techno MBAs, both as consultants and to fill a wide range of sales, marketing, manufacturing, operations and other management positions.

Techno MBAs are business school graduates who have been trained in the same hardware and software they will encounter in the real world upon graduating. In 1997, U.S. companies will hire 17% more techno MBAs than they did in 1995, according to a recent survey conducted by the University of California, Irvine.

Most of the graduates go into consulting, frequently starting out as systems integrators at Big Six firms. But some also fill staff IS positions. Last year, 9% of the university's 95 techno MBA graduates went directly into IS organizations.

"I think more technical people should get MBA degrees," said Dean Sively, chief information officer and vice president of marketing at Rosenbluth Travel, Inc. in Philadelphia.

Sively said he wasn't familiar with techno MBAs. But any program that combines IS and business education would most likely be viewed favorably by IS hiring managers because "business skills is the main area where technical people are weakest," Sively said.

This year, about 3,000 of the roughly 88,000 MBAs awarded will be techno MBAs, according to the American Association of Collegiate Schools of Business.

More than 275 U.S. business schools offer the combined management/IS graduate programs, which have been around about a decade.

The main idea behind the hybrid two-year academic programs is to teach how technology can support various functional areas throughout a business.

"The other big piece is we want students to understand how enterprise integration is achieved through technology," said Vijay Gurbaxani, an associate dean at the University of California.

Fast facts

Percentage change in projected MBA hirings from 1995 to 1997:

–13%

Percentage change in projected techno MBA hirings from 1995 to 1997:

17%

Percentage change in projected techno MBA hirings from 1995 to 1997 by Big Six accounting firms:

142%

Source: University of California, Irvine

A new method

To this end, the university is implementing Oracle Corp. databases, SAP AG's enterprise R/3 system and other leading software, which students will use regularly in their studies.

"When you think about accounting, we still talk about entries, debits and credits, but it's really the system that is increasingly making entries for you. Students need to understand how technology is replacing a lot of things people used to do," Gurbaxani said.

The curriculum also offers several technology-oriented courses, including electronic commerce, database marketing, marketing on the Internet and financial decision support.

Alexander Chan, a 1996 graduate of the University of California program, said it helped him quickly land a job as a systems integration specialist at Deloitte & Touche in San Francisco. It was one of six jobs offered to him when he graduated.

"Regardless of whether you're in accounting, finance or manufacturing, technology has something to do with it," Chan said. "The program prepared me very well to leverage technology and in having an attitude for change."

Objects are pipeline to gas competition

By Thomas Hoffman
BROOKLYN, N.Y.

Object-oriented technology is helping Brooklyn Union Gas Co. react faster to deregulation in the natural gas industry than most of its competitors.

On May 1, New York became the first state to "unbundle" gas services; residential and commercial customers were given the flexibility to purchase natural gas from their supplier of choice. Brooklyn Union is believed to have been the first utility in the state to sell gas through third parties when the deregulation went into effect July 1, thanks to a new billing system that supports selling gas through remarketers.

Brooklyn Union CIO Tina Barber: *The utility developed its object-based systems on IBM mainframes in 1990 'to reduce the risks' of using what was then a pioneering technology*

Without a new billing system, Brooklyn Union would have been forced to hire nine clerical workers to manage 1,000 new accounts. Therefore, the billing system is saving the company at least $200,000 in staff costs, analysts estimated.

Seeing the changes on the horizon, Brooklyn Union spent four months

Objects, *page 82*

Extra room on the shelf

Scalability helps ShopKo plan for merger

By Michael Goldberg

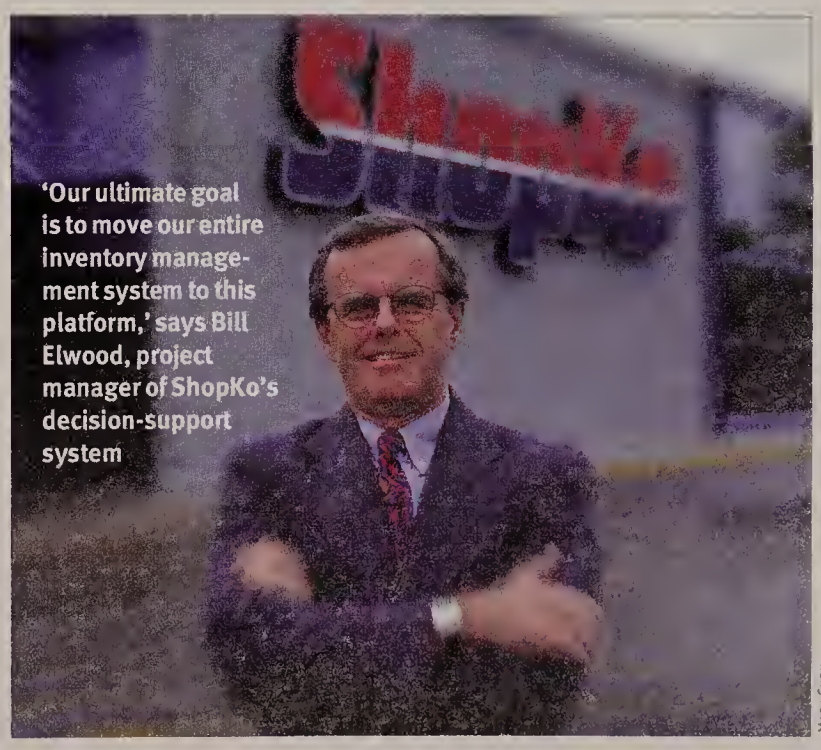
When IS managers at ShopKo Stores, Inc. evaluated the technology needed to build a decision-support system (DSS), they first asked scalability questions: What happens if our number of retail stores doubles? What if our data warehouse triples in size?

ShopKo's 1994 decision to build plenty of room for growth into a strategic system now appears ready to pay off in more ways than one. Executives are working on implementing a merger with Phar-Mor, Inc., a discount pharmacy chain. The merger was announced last month.

In-house, ShopKo continues to develop ways to analyze an expanding data warehouse, seeking merchandising trends and marketing opportunities to help the company compete. So far, the firm has improved its ability to analyze inventory sales. "We're getting much more information and much faster," said Bill Elwood, project manager for ShopKo's DSS.

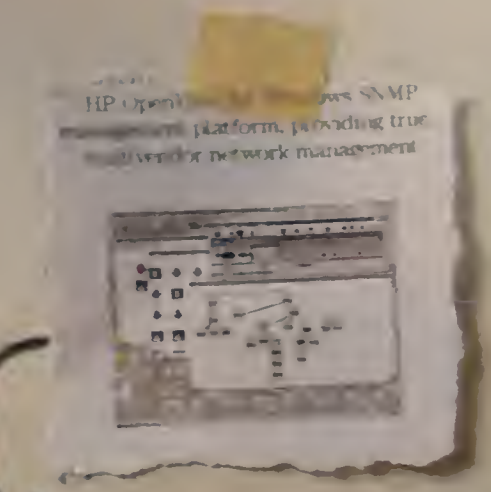
In a broader corporate outlook, ShopKo's ability to accommodate DSS growth could play a role in the organization created by the merger. Indeed, both companies

ShopKo, *page 84*



'Our ultimate goal is to move our entire inventory management system to this platform,' says Bill Elwood, project manager of ShopKo's decision-support system

MARK GUBIN



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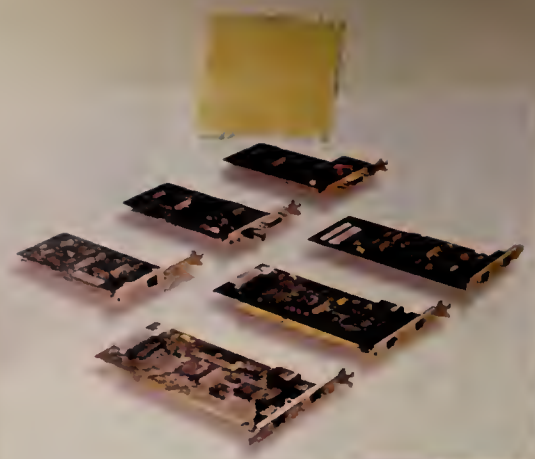

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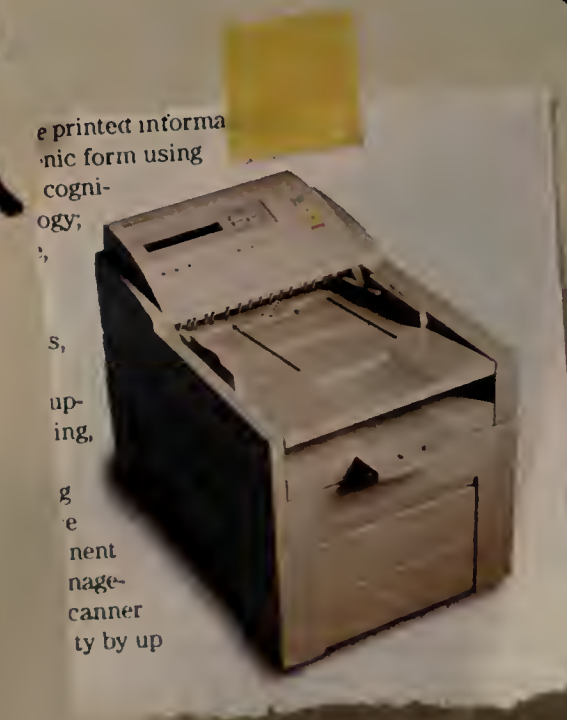

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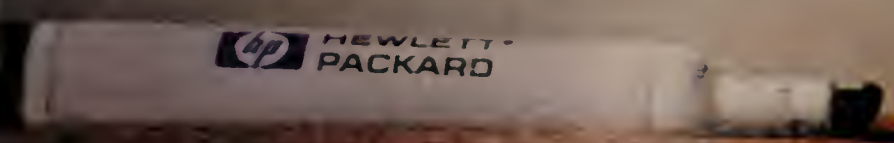

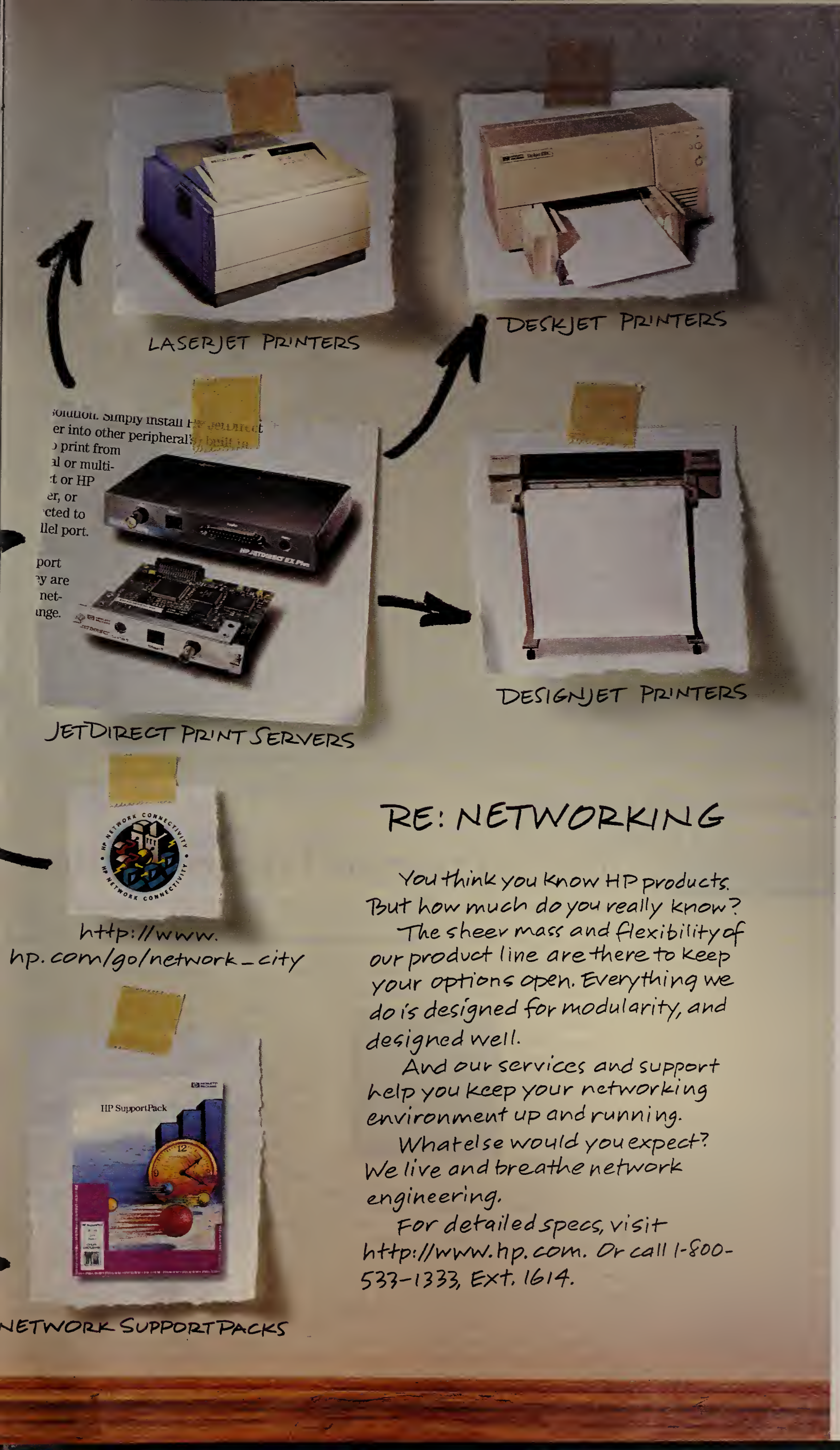

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Voice lines get handed off to frame relay

By Kim Girard

Companies with remote or international offices are increasingly moving their voice traffic onto frame-relay links to bypass the public telephone network.

And now, strangely enough, carriers are beginning to sacrifice their private-line profits to help corporate users save thousands on internal telephone calls. Chicago-based Ameritech Corp. this month was the first regional Bell operating company to announce a voice-over-frame-relay service. Ameritech will use Motorola, Inc.'s 6520 MPRouter and manage the service.

"Ameritech has taken a proactive stance," said Traver Kennedy, director of wide-area network research at Aberdeen Group, Inc. in Boston. "Even if they lose some business, if they don't put themselves out, someone else will."

Increasing interest

Surprisingly, just 1% of all frame-relay users run voice over their frame-relay circuits, according to the Frame Relay Forum. But interest is rapidly increasing as frame relay becomes a mainstream business service.

"It's an absolute no-brainer" because voice quality has vastly improved and the deal is too good for many companies to pass up, said Erin Dunne, research manager at Vertical Systems Group in Dedham, Mass.

Pitfalls of putting voice over frame-relay circuits

- Different vendor and carrier products aren't interoperable
- Voice quality falls somewhere between toll call and cellular
- Providers can't always guarantee quality of service

Dave Corner, chief financial officer at Fern Lea Flowers in Delhi, Ontario, said he expects to save $30,000 to $40,000 this year on an expected $260,000 phone bill by using the service to link the company's Ontario distribution center to locations in Quincy, Fla., and Stuart, Fla.

Fern Lea, which distributes plants to retailers such as Wal-Mart Stores, Inc., installed Scitec Americas equipment in February. Brak Systems, Inc. in Mississauga,Ontario, manages the network.

"The voice isn't as good as direct line but [is] very manageable, given its cost," Corner said. "It's at least cellular [quality]."

William Horst, chief of the communications branch at the General Services Administration in Philadelphia, said his agency tested ACT Networks' beta voice-over-frame-relay equipment six months ago. Although the sound was acceptable, Horst said, the lack of standards and a tendency to drop packets were concerns. Among other concerns of voice-over-frame-relay users are congestion, frames received at different rates and network delay.

"We may look at it in the future if we can get more bang for the buck and not sacrifice data," Horst said.

Paul Hallett, general manager at Scitec Americas, a Raynham, Mass.-based division of information technology equipment manufacturer Scitec Ltd., said most of its voice-over-frame-relay customers are small to midsize multinationals or companies that operate in the Midwest, where local loops are longer and tariffs are higher. Unlike larger U.S. corporations, which can negotiate out-of-state telephone rates of about 6 cents per minute, smaller companies are lured by voice-over-frame-relay's less expensive rates, Hallett said. He said he tells customers the change will typically pay for itself within a year.

Carriers take cautious approach

Chicago-based Ameritech has joined MFS Communications Corp. in taking the plunge to offer voice-over-frame-relay service to customers.

Whether more companies will jump on the bandwagon remains to be seen.

"Most carriers don't want to get into this because it steals from voice traffic," said Traver Kennedy, director of wide-area network research at Aberdeen Group.

Although Sprint Corp. demonstrated the technology with Micom Corp. at Networld/Interop '96, the company has made no commitment to offer it. Doug O'Leary, a technologist at Bell Atlantic Corp. and a Frame Relay Forum user, said the company is aware of voice-over-frame-relay service but hasn't moved on it.

Todd Bahner, MCI Communications Corp.'s frame-relay marketing manager, said offering the service now would be difficult because the Frame Relay Forum has yet to iron out standards for transporting voice over frame on the wide area. Because of this, Bahner said he worries about guaranteeing quality of service to a customer. Also, he said, since most frame-relay access device vendors are developing products that use proprietary technologies, carriers that partner with these vendors cannot offer customers any future flexibility based on standards.

Users warned

But using a carrier for the service is not necessarily going to work out in the long term either. Tom Nolle, president of CIMI Corp. in Voorhees, N.J., advises users to "beware."

"If voice over frame becomes more popular, carriers will recognize it's more bandwidth-consumptive and they'll change tariff paradigms," he said. "So any investment you make as a user is at risk."

— Kim Girard

Briefs

Year 2000 templates

HCL James Martin, Inc., a year 2000 services provider in Fairfax, Va., has made its systems redevelopment methodology available to **Microsoft Corp.** customers through Microsoft Project templates. The System Redevelopment Methodology Year 2000 Microsoft Project Plan templates can be downloaded from the Microsoft Project World Wide Web site at www.microsoft.com/msproject.

Quality-assurance module introduced

MK Group, a division of **Computer Associates International, Inc.**, has introduced a computer-aided quality-assurance module. The software is aimed at helping midsize manufacturers achieve International Standards Organization 9000 certification. The vendor also debuted an advanced warehouse management module for its enterprise resource planning package, which is aimed at manufacturers. Also released was PMK, a dynamic constraint-based scheduling module designed to provide users with improved manufacturing throughput and reduced lead times.

Outsourcing deal

Computer Sciences Corp. (CSC) has won an outsourcing contract to process managed Medicaid claims for **Gateway Health Plan** in Pittsburgh. Under terms of the agreement, CSC will provide information services, data warehousing and decision-support systems and other services to Gateway from its Albany, N.Y., data center. Terms and the length of the agreement were not disclosed.

Objects are pipeline to gas competition

CONTINUED FROM PAGE 79

building a framework for the billing system using ParcPlace-Digitalk, Inc.'s Smalltalk programming tools, said William T. Rachmiel, director of information systems at the utility. Once the market requirements became more clear, Brooklyn Union — which serves 1.1 million customers in the New York boroughs of Staten Island, Brooklyn and Queens — was able to customize the billing system quickly to handle orders from 21 different gas marketers.

Brooklyn Union "has never waited to be told how to do things" by regulatory agencies. — Douglas Christopher, Crowell, Weedon & Co.

Recycled code

Brooklyn Union's billing systems were the outgrowth of a $45 million overhaul in 1990 of its Customer Related Information System (CRIS). The utility has been able to reuse much of the code base from the revised system, called CRIS II, in subsequent systems. Analysts said they believe CRIS II was the first major commercial object system.

"We're in a world that's shaping and reshaping so frequently" that standard mainframe or client/server billing applications would "obsolete themselves," said Tina G. Barber, Brooklyn Union's vice president and chief information officer.

CRIS II's achievements — which were praised in a 1992 *Harvard Business Review* case study — reflect how Brooklyn Union has been "one of the leading companies" reacting to the new regulatory climate, said Ronald Barone, a utilities analyst at PaineWebber, Inc. in New York.

Brooklyn Union "has never waited to be told how to do things" by regulatory agencies — something that is a persistent problem for most slow-moving utilities, said Douglas Christopher, an analyst at Crowell, Weedon & Co. in Los Angeles.

CRIS II has paid other dividends in the past six years, including the addition in 1992 of an electronic queuing system that an inexperienced programmer built in four months. Customer service representatives use the system to replace the memos previously used to schedule some of Brooklyn Union's meter readings and to identify delinquent bill payers.

Using Smalltalk programming tools, the programmer was able to reuse 40,000 lines of PL/1 code from CRIS II and needed to write only 2,000 lines to complete the project.

By comparison, it would have taken a "highly paid, experienced programmer" 80 months to develop a comparable client/server system from the ground up, Barber said.

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Denver	November 14	San Diego	October 15
Detroit	October 24	San Francisco	October 17
Houston	October 23	Schaumburg, IL	November 8
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ShopKo

CONTINUED FROM PAGE 79

...agreed the merger would help them save money on purchasing and other operations, including information systems, while helping them to compete better against national chains such as Wal-Mart Stores, Inc. and Walgreen Co.

Because the companies are still developing a business integration plan, ShopKo Chief Information Officer Jim Tucker said it is not clear yet how the merger will impact his IS operation at the company's Green Bay, Wis., headquarters. The merger "makes it more imperative to get" the data warehouse system fully operational, Tucker said.

"It's fair to say that we've been building IS the last couple of years to support mergers and acquisitions," Tucker added.

Retailing consultant Mohsen Moazami said ShopKo was smarter than many companies that seek to build a DSS.

"The prime objective for retailers is to have [information technology] be in alignment with the [broader] business strategy. You have to make sure that you always include one big question: 'How is growth going to be accomplished?' We don't see enough of that," said Moazami, national director at Kurt Salmon Associates, Inc.'s advanced technology group in Los Angeles.

Step at a time

ShopKo has taken a gradual approach to constructing a data warehouse to support decisions on merchandising, marketing and promotions at its 130 stores in 15 Midwest and Western states. Now at approximately 200G bytes, the data warehouse uses a 35-node IBM SP2 with an Oracle Corp. database and Retail Inventory System software from Retek Information Systems Ltd. in Australia.

"Our ultimate goal is to move our entire inventory management system to this platform," Elwood said. He added that ShopKo plans to use analysis and database query tools to look at sales trends, for example, to identify exceptional success or failure in product promotions.

Elwood, who was part of the benchmarking team that chose a scalable system, said he works closely with vendors to improve what is still a new technology. For example, the Unix world needs more mature, mainframe-like functions for backup, recovery and systems management.

ShopKo and Phar-Mor announced their merger plans on Sept. 9. Both chains will keep their names and run as subsidiaries of a holding company that is called Cabot Noble, Inc.

ShopKo reported $1.97 billion in sales for the fiscal year ended in February. Phar-Mor, which has 102 stores in 18 states, had $1.1 billion in sales for its fiscal year ended in June.

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Briefs

Bank picks software

Bank of Bermuda has selected Lexington, Mass.-based **Logica, Inc.** to install its BankMaster Plus asset/liability and financial planning software throughout its international offices. The bank intends to use the Windows-based software to help it forecast performance of its financial products based on a range of interest rate conditions.

Eddie Bauer to use scheduling software

Eddie Bauer, Inc. has licensed Evanston, Ill.-based Campbell Software, Inc.'s StaffWorks labor scheduler and Campbell Time and Attendance software programs to help the Redmond, Wash.-based retailer manage and schedule employee workloads. Eddie Bauer plans to roll out the Campbell systems in 85 of its 450 stores by year's end.

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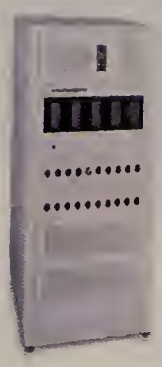

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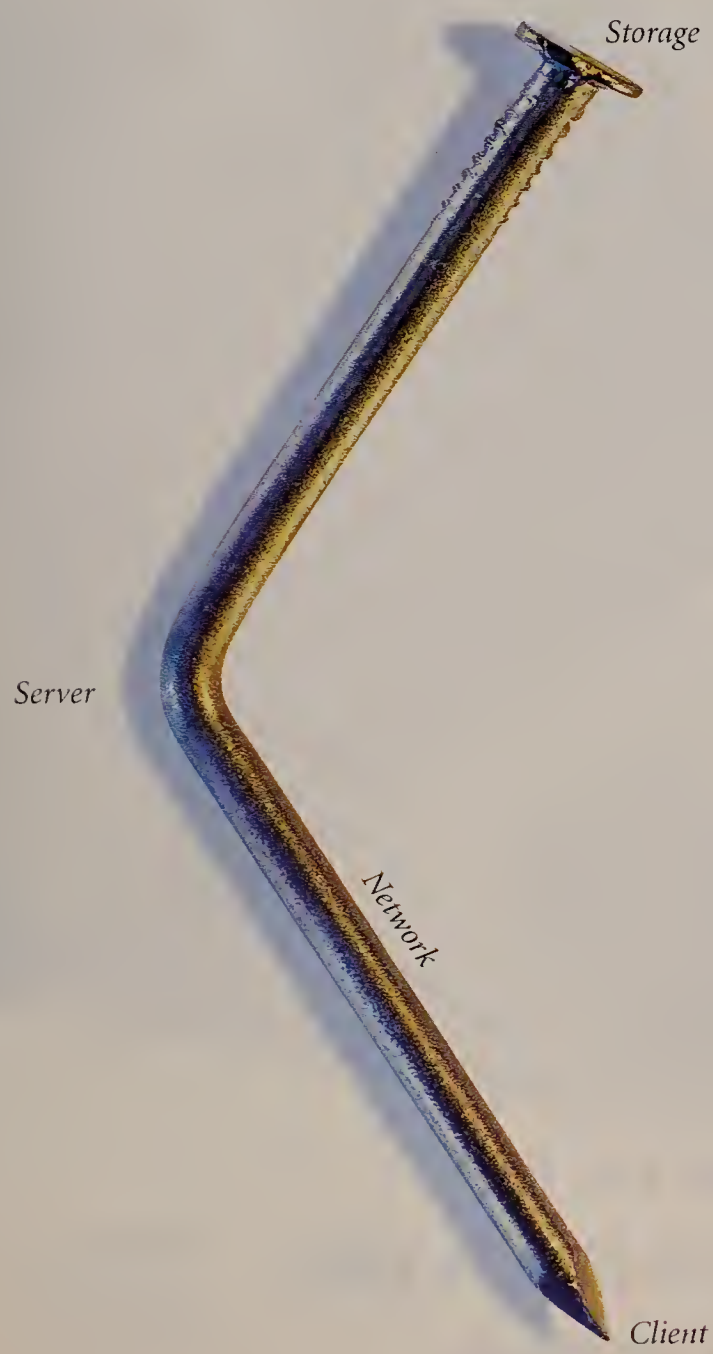

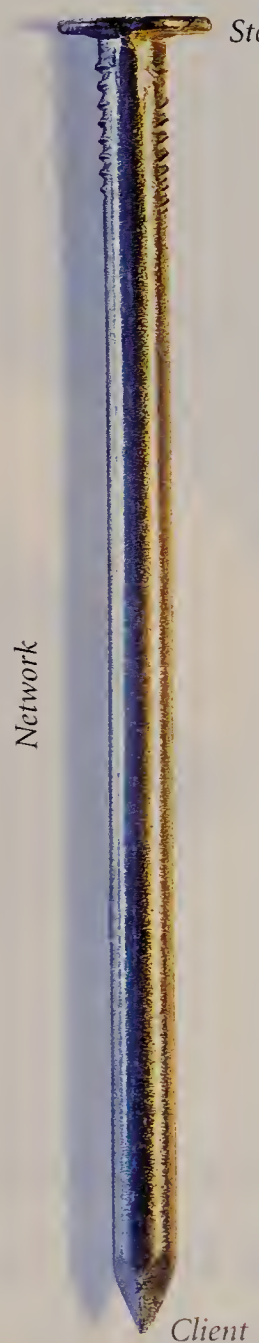

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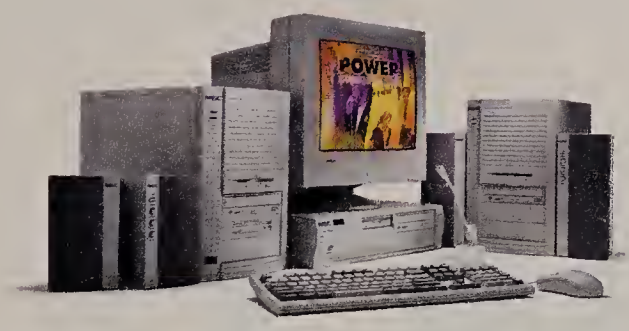

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Key # 20823

Managing

Managing Web-spectations

By Steve Alexander

You're besieged with requests for World Wide Web projects. What to do? Tame users' expectations, and sprinkle some reality on their Internet dreams.

Jim Tuominen decided the only way to deal with growing user expectations of the Web was to seize the initiative and set some rules.

"The departments wanted us to do content management for them. We told them that they are the content owners, and we provide the tools," says Tuominen, assistant vice president of information services at the National Fire Protection Association, a nonprofit organization in Quincy, Mass., that develops standards for electrical and fire safety.

Although many companies are in the early stages of using the Web, some information systems managers such as Tuominen face the problem of managing users' Web expectations.

Security concerns, Web technology's limits and Web hype in the media are combining to put pressure on IS managers, who sometimes feel they must be in two places at once — working on new Web projects while keeping existing company applications running. "With all the press that the Internet is receiving, we've been getting lots of ad hoc requests to do new Web projects from all the different business units," Tuominen says.

Bruce Moore, vice president of systems and planning at Bernard Hodes Advertising in Palo Alto, Calif., says: "It's very difficult to convince users [to do things the IS way] because the things you can do on a Web page are intoxicating, and a lot of times people want to do them because they can be done." Bernard Hodes runs the Career Mosaic jobs Web page (www.careermosaic.com).

But smart IS managers are finding ways to manage Web frenzy with education: two-step projects that give users quick satisfaction and company-wide committees that help moderate unrealistic Web enthusiasm.

Taboo topics

LEILANI ALLEN's *new column tackles issues that IS managers usually discuss "behind closed doors." Page 90.*

5 ways to the Web

1. **Educate users about the Internet and its limitations, but talk in simple terms.**
2. **Use companywide committees to restrain unrealistic Web expectations and set priorities.**
3. **Use two-step projects that give users quick satisfaction and provide real value.**
4. **Seize the initiative. If you don't, users will.**
5. **Don't be too restrictive; users can work around you.**

To manage user expectations, Tuominen first pursued education, scheduling sessions with users that informed them and let them know that they — not IS — were responsible for Internet content.

Then Tuominen created a cross-functional team of 12 to 15 people from the 300-employee association. The team focused on setting Web priorities — in effect, heading off more ad hoc requests from the business units. It worked. User requests were focused on the priorities the team had set.

Other IS managers have taken different approaches. Max Hopper, former chief information officer at American Airlines and now an IS consultant in Dallas, says IS managers should remind enthusiastic users that not everyone is as Web-minded as they are.

"There certainly are some early adopters who really want to take advantage of the Web, and they are pushing IS departments. But the vast majority of users are not ready to assimilate what the Web can do for them," Hopper says.

For example, although enthusiastic users may think it's a good idea to put standard company information — such as telephone numbers and electronic-mail addresses — on the Web, those who aren't so Web-minded may object to having that data readily available to outsiders, Hopper says.

It's not that easy

Another tack IS managers can take: Teach users the Web isn't as simple as it looks, Hopper says. "You don't want to confuse the users, but you need to let them know the complexity of the Web," he says.

Mary Jo Orzech, who has presented a series of seminars and workshops about the Web for students, departments and administrators at the 6,300-student State University of New York campus in Brockport, tries to make users understand how Web demands stretch IS thin.

"I say, 'We only have so much time, and there are so few of us that we ... use our time as wisely as possible,'" says Orzech, director of academic computing services.

Users believe her, at least to a certain extent. "They know there are boundaries to what can be done, but nobody quite knows where those boundaries are yet. It's hard to draw a line in the sand," Orzech says.

So far, most users have been willing to go along with her, she says.

When you talk to users about the Web, avoid being dictatorial, warns Stephen Cobb, director of special projects at the National Computer Security Association in Carlisle, Pa. The association certifies the effectiveness of antivirus and firewall products and produces computer security conferences.

"You cannot dictate a security policy that is too restrictive relative to people's expectations," Cobb says. "If you just tell people they can't access the Internet, they'll plug a modem in to a desktop computer on your LAN. And if that computer is running TCP/IP, then your company is on the Internet, and you just don't know it."

Loosen up

One way to manage user expectations: Give in a little, Cobb says. If you have security concerns, let users access the Web via special PCs that aren't connected to corporate networks.

If you feel compelled to lay down firm rules about Web use, explain why you're doing it. If they understand, they're more likely to see it your way.

After education comes setting priorities. And if IS seizes the initiative, it can control who's in charge of projects and in which order they get funded. Tuominen's cross-functional team set up its own priority list of Web projects based on cost and payback, then identified the business unit champions for each project and sought management's blessing for spending in each area. But saying no is another part of managing user expectations.

And there's a right way to do it, Tuominen says. "You say 'no' in immediate response, but say their project will be in the head of the queue if it indeed provides some benefit that fits what we are trying to accomplish," he says.

Just say 'consultant'

Cobb suggests hiring outside consultants to say no to Web projects. "Bringing in consultants deflects negativity from management and also has the novelty effect of coming from somebody different who is an engaging presenter," he says.

After a year of providing more than 20,000 white-collar workers with Internet access, Jim Sutter, vice president and general manager of IS at Rockwell International Corp. in Seal Beach, Calif., says it's easier to manage Web expectations than it was to manage user expectations of client/server technology when it came into vogue a few years ago.

"There are problems in coping with the growth of the Web, but by and large many new products offered on the Internet do adhere to standards," Sutter says. "The Internet is more real." ■

Alexander is a freelance writer in Edina, Minn.

Online this week
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Is users' Web frenzy making your life frantic? Share your experiences this week on our Web site (www.computerworld.com) in an online discussion.

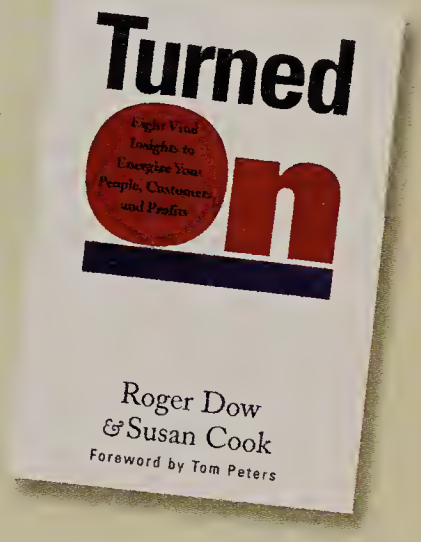
F.Y.I.

IS Manager's Bookshelf

TURNED ON
By Roger Dow and Susan Cook
Harper Business, New York; 292 pages; $25

Brushing up on people skills is one of those things that usually falls to the bottom of an information systems manager's "to do" list, somewhere below getting more exercise and cleaning off your desk. But imagine how much more effective you would be if you could make your staff energized, inspired and even passionate about their work and about satisfying users.

Turned On, co-written by a sales executive at Marriott Lodging (Dow) and a training and personal development consultant, tries to show their managers how to hypercharge their staff. It's organized around eight "insights" and 32 "practices" designed to help put those insights into practice. Some of the tips, such as "Simplify, simplify, simplify" and "Build a winning team" seem so obvious as to be ridiculous. Others, such as "Hire the head and the heart" and "You must care" might seem impossibly touchy-feely. But like many self-help books, *Turned On* is valuable as an easy-to-take reminder of what we already know we should be doing.



Not only do the authors keep each section mercifully short, but they illustrate their points with examples of how turned-on workers — ranging from nurses to residents of a crime-ridden housing project — produce spectacular results. For each insight, there's also a one-page checklist of ways to begin turning the insight into action. This is where IS managers may find some of the best advice, such as putting a price tag on customer (user) dissatisfaction to decide what needs fixing the most and compensating people based on how well they meet the most critical needs.

Bottom line: Keep this on your desk (or in your car's tape deck) as a refresher between bouts with smooth-talking vendors and gritty people problems. Sometimes, the obvious answer (said very well) is just what you need.

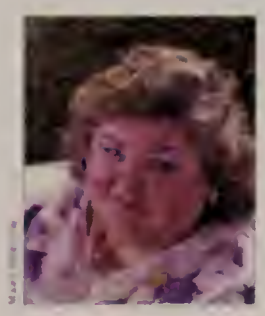
— Robert L. Scheier

More F.Y.I., *page 90*

Leilani Allen

'Sam' presents a layoff dilemma

Performance and potential go hand in hand when it's time to cut staff



Allen's new monthly column deals with the kinds of people issues managers face every day but are often reluctant to discuss openly. Each column is based on an actual situation experienced by Allen or a colleague. The names and certain circumstances are changed to protect confidentiality. Allen, a director at Tenex, a management consulting firm in Burlington, Mass., invites readers to share their experiences with her via electronic mail at lallen@tenex.com.

The dreaded word came down from corporate: Cut staff by 10%. If you haven't been there, brace yourself for an emotional roller coaster. Every manager worth his salt is going to try to do everything to save his staff. Managers are motivated by a genuine concern as well as vested self interest in having as many resources as possible to continue to perform their unit's work.

How do you decide who to let go? Logic would tell you to use this opportunity to weed out poorer performers. But is past performance always a predictor of future contribution? And what role do personal factors play in the decision?

Consider Sam, a 50-year-old senior programmer. He has been with the company 15 years and once was a pretty good Cobol programmer. But he has let his skills atrophy and moved in to operations in what is essentially a business user role, producing simple reports from production statistics. Users like him, he performs the job competently and comes in as regular as clockwork.

The dialogue between the chief information officer and Sam's manager goes something like this:

CIO: Is he really performing the role of a senior programmer? He probably couldn't move back to development. He's really doing a clerical task for which the users should be responsible. Information technology management has actively encouraged him to learn new skills, but this has been unsuccessful.

He seems completely content in his current role. Yes, his attendance is good, but he's a 9-to-5er and shows no initiative. He's highly paid, certainly overpaid for what he's doing.

MANAGER: But it's only in the last two years that management has asked him to do anything more. And what about loyalty? Doesn't the company owe him something for 10 years? What about his personal situation? Between his age and his skill set, he's going to have a hard time finding another job. He's got school-age children to support.

CIO: Does that mean married people without children or single people should bear the brunt in any downsizing? Marriage and children are personal decisions. They shouldn't have any bearing on a managerial decision such as this. That's just reverse discrimination.

MANAGER: So we're going to keep the young kids who might leave us in a year or two and get rid of someone who we know is a loyal employee?

CIO: Don't confuse loyalty with lack of motivation. He may have stayed here simply because he was too comfortable to look elsewhere. Remember, we have to place fairness in the context of the entire workforce. We also have a duty to the shareholders to keep the best talent around to achieve the corporate goals.

JUDGMENT CALL: Sam's job was eliminated, and it was determined there was no other position to which he could move at his job level. Management has to constantly focus on maximizing performance and potential — the key measures of employee value.

We have to try hard to make sure performance is measured as objectively as possible, and we have to ensure we are constantly challenging employees to realize their full potential. Otherwise, we are doing the "good old Sams" no favors but rather making them sitting ducks in the next downsizing wave. ■

F.Y.I.

MULTIMEDIA LAW AND BUSINESS HANDBOOK

By J. Dianne Brinson and Mark F. Radcliffe

Ladera Press, Menlo Park, Calif.; 453 pages; $44.95

So, you think anything on the Internet is ripe for the copying because it's in the public domain? Think again. Lifting something off the World Wide Web is the same thing as lifting from a book. This guide, written by two California lawyers, is a handy reference for anyone who engages in any kind of publishing — from newsletters to the Internet. It covers everything from fair use to copyright law.

Brinson and Radcliffe also offer advice on contracts with Web site developers. There's a disk tucked inside the back that contains sample contracts referred to throughout the book. They also tell you how to register Web sites. — *Rick Saia*

INFORMATION SEEKING: AN ORGANIZATIONAL DILEMMA

[illegible]

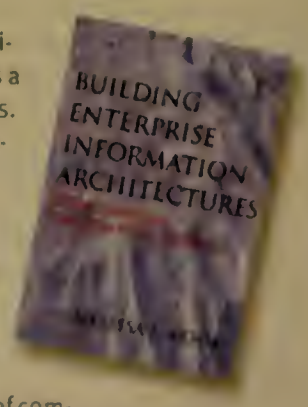
[illegible]; 179 pages; $55

[illegible] book. The author picked a good topic: IS managers need to understand how users gather information. Unfortunately, this book is [illegible] and makes little or no attempt to relate "information [illegible]" to [illegible] issues IS managers have. Johnson, a professor at Michigan State University, simply retreads academic research going back to the 1940s. I couldn't find evidence that Johnson spoke directly with actual managers. Although the chapter on "Strategies for Managers" contains the kernels of a few good ideas, practitioners won't find specific programs or techniques that they can apply. — *Allan E. Alter*

BUILDING ENTERPRISE INFORMATION ARCHITECTURES: REENGINEERING INFORMATION SYSTEMS

By Melissa A. Cook

Hewlett-Packard Professional Books (Prentice Hall PTR), Upper Saddle Creek, N.J.; 224 pages; $25.95



Do you need to get a handle on information architecture and data modeling? This book provides a helpful framework for understanding these concepts. You'll find a historical and theoretical overview of information architecture, learn how to classify and group data and discover why a solid architecture is important for re-engineering business processes. There's some meaty material about why companies resist building information architectures. Cook's writing is usually sprightly and humorous, although not entirely free of dense passages. The book has other defects: It contains no case studies of companies or information architects in action. It's exclusively devoted to the information architecture approach taken by guru John Zachman and offers little about information technology per se. All in all, not quite a full-course dinner from this Cook. — *Allan E. Alter*

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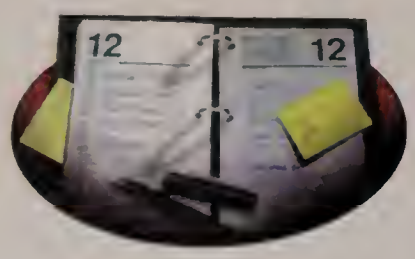

November conferences

MANAGEMENT

Service Company Executives Forum. Orlando, Fla., **Nov. 2-4** — Association for Information and Image Management, Silver Spring, Md. (301) 587-8202. Fax: (301) 587-2711. E-mail address: aiim@aiim.org.

Enterprise Management Summit. Santa Clara, Calif., **Nov. 4-7** — Contact: Enterprise Management Summit, San Francisco (800) 340-2111. E-mail address: summit@motive.com. World Wide Web address: www.summit.micromuse.com.

Customer-Driven IT: The Breakthrough Technologies. New York, **Nov. 12-13** — Contact: The Yankee Group, Boston, Mass. (617) 367-1000. Fax: (617) 367-5760. Web address: www.yankee-group.com.

The Annual Cost Management Congress. San Diego. **Nov. 20-22** — Contact: Global Business Research Ltd., New York, N.Y. (800) 868-7188. Fax: (212) 645-4490. Web address: www.global8.com.

TECHNOLOGIES

Oracle Open World. San Francisco, **Nov. 3-8** — Contact: Oracle Open World, San Jose, Calif. (800) 304-4664 or (415) 633-3999. Fax: (415) 506 3441.

CMA Telecom '96. New York, **Nov. 4-7** — Contact: Talley Management Group, Woodbury, N.J. (800) 262 3976 or (609) 384-2858. Fax: (609) 853-0411. Web address: www.cma.org.

IntraNetworking Summit '96. Washington, **Nov. 6-7** — Contact: Creative Expos and Conferences, North Walpole, Mass. (508) 668-7979. Fax: (508) 668-2416. E-mail address: summit@creativeexpos.com.

UIST '96: Symposium on User Interface Software and Technology. Seattle, **Nov. 6-8** — Contact: Association for Computing Machinery, New York, N.Y. (212) 869-7440. Fax: (212) 869-0481.

SCAN-TECH '96. Chicago, **Nov. 7-8** — Contact: Cahners Exhibition Co., Norwalk, Conn. (800) 274-5944. Fax: (203) 840-9670.

The 4th Annual Mobile Communications Conference. New York, **Nov. 7-8** — Contact: The Yankee Group, Boston, Mass. (617) 367-1000, ext. 294. Fax: (617) 956-5004. Web address: www.yankeegroup.com.

ICCAD '96: International Conference on Computer Aided Design. San Jose, Calif. **Nov. 10-14** — Contact: Department of Electrical and Computer Engineering, Carnegie Mellon University, Pittsburgh, Pa. (412) 268-3334.

Next Generation Networks. Washington, **Nov. 11-14** — Contact: Business Communications Review, Hinsdale, Ill. (800) 227-1234. Fax: (630) 323-5324. Web address: www.bcr.com.

International Software Testing Conference. Orlando, Fla., **Nov. 11-15** — Contact: Quality Assurance Institute, Orlando, Fla. (407) 363-1111. Fax: (407) 363-1112.

Broadband World Expo '96. Chicago, **Nov. 12-14** — Contact: E. J. Krause & Associates, Inc., Hagerstown, Md. (301) 986-7800.

Field and Sales Force Automation Conference. Atlanta, **Nov. 12-14** — Contact: Digital Consulting, Inc., Andover, Mass. (508) 470-3880. Fax: (508) 470-0526. E-mail: ConfReg@dciexpo.com. Web address: www.DCIexpo.com.

Documation Canada. Toronto, **Nov. 12-14** — Contact: InterDoc Corp., Montreal, Canada (514) 288-7501. Fax: (514) 288-7596. E-mail address: documation@interdoc.ca. Web address: www.interdoccorp.com.

ACM/IEEE Supercomputing '96. Pittsburgh, **Nov. 17-22** — Contact: Association for Computing Machinery (ACM), New York, N.Y. (212) 869-7440.

Key Strategies for Integrated Delivery Systems Technology. Coronado, Calif., **Nov. 18-19** — Contact: Conference Development, Inc., Burlington, Mass. (800) 872-0094. Fax: (617) 270 6004.

HOT HAPPENING — Comdex/Fall '96. Las Vegas, **Nov. 18-22** — Contact: Softbank Comdex, Needham, Mass. (617) 433-1650. Fax: (617) 449-2674.; Web address: www.comdex.com.

Client/Server '96. Orlando, Fla., **Nov. 19-21** — Contact: MIS Training Institute, Framingham, Mass. (508) 879-7999. Fax: (508) 872-1153. E-mail address: mis@misti.ccmail.compuserve.com. Web address: www.misti.com.

Color Imaging Conference. Scottsdale, Ariz., **Nov. 19-22** — Contact: Society for Information Display, Springfield, Va. (703) 642-9090. Fax: (703) 642-9094. E-mail address: info@imaging.org. Web address: www.imaging.org.

USER GROUPS

CASE Day '96 at Oracle Open World. San Francisco, **Nov. 3** — Contact: Oracle Development Tool User Group, Wilmington, N.C. (910) 452-7444. Fax: (910) 452-7834. E-mail address: 102351.1311@compuserve.com. Web address: www.odtug.com.

Aimtech User Conference and Web Summit. San Diego, **Nov. 3-6** — Contact: Aimtech Corp., Nashua, N.H. (603) 883-0220. Fax: (603) 883-5582. Web address: www.aimtech.com.

UNITE Conference (Unisys clients). Philadelphia, **Nov. 4-7** — Contact: UNITE, Sinclair Shores, Mich. (810) 771-4483. Fax: (810) 771-9598. E-mail address: UNITENC@aol.com. Web address: www.unite.org.

Cognos 1996 North America User Conference. San Diego, **Nov. 11-13** — Contact: Cognos, Cambridge, Mass. (800) 784-6581. Web address: www.cognos.com.

INDUSTRIES

Association of Manufacturing Excellence International Conference. Milwaukee, **Nov. 5-8** — Contact: Association of Manufacturing Excellence, Wheeling, Ill. (847) 520-3282, ext. 223. Fax: (847) 520-0163.

Capturing, Analyzing and Utilizing Data for Disease Management Programs. San Francisco, **Nov. 7-8** — Contact: The National Managed Health Care Congress, Burlington, Mass. (800) 872-0094. Fax: (617) 270-6004.

Autofact (Automation in Manufacturing and Productivity). Detroit, **Nov. 12-14** — Contact: Society of Manufacturing Engineers, Dearborn, Mich. (313) 271-1500. Fax: (313) 271-8161.

Image-Capable Advanced Clinical Information Systems. Boston, **Nov. 19-20** — Contact: IBC USA Conferences, Inc., Southboro, Mass. (508) 481-6400. Fax: (508) 481-7911. Web address: www.io.org/~ibc/clinicalinfo.

SECURITY

CyberRisk '96 (Reducing risk and building ethical policies in the electronic workplace). Arlington, Va., **Nov. 7-8** — Contact: National Computer Security Association, Carlisle, Pa. (717) 258-1816, ext. 226. Fax: (717) 243-8642. E-mail address: conference@ncsa.com. Web address: www.ncsa.com.

Computer Security Conference and Exhibition. Chicago, **Nov. 11-13** — Contact: Computer Security Institute, San Francisco, Calif. (415) 905-2626. Fax: (415) 905-2218. Web address: www.gocsi.com.

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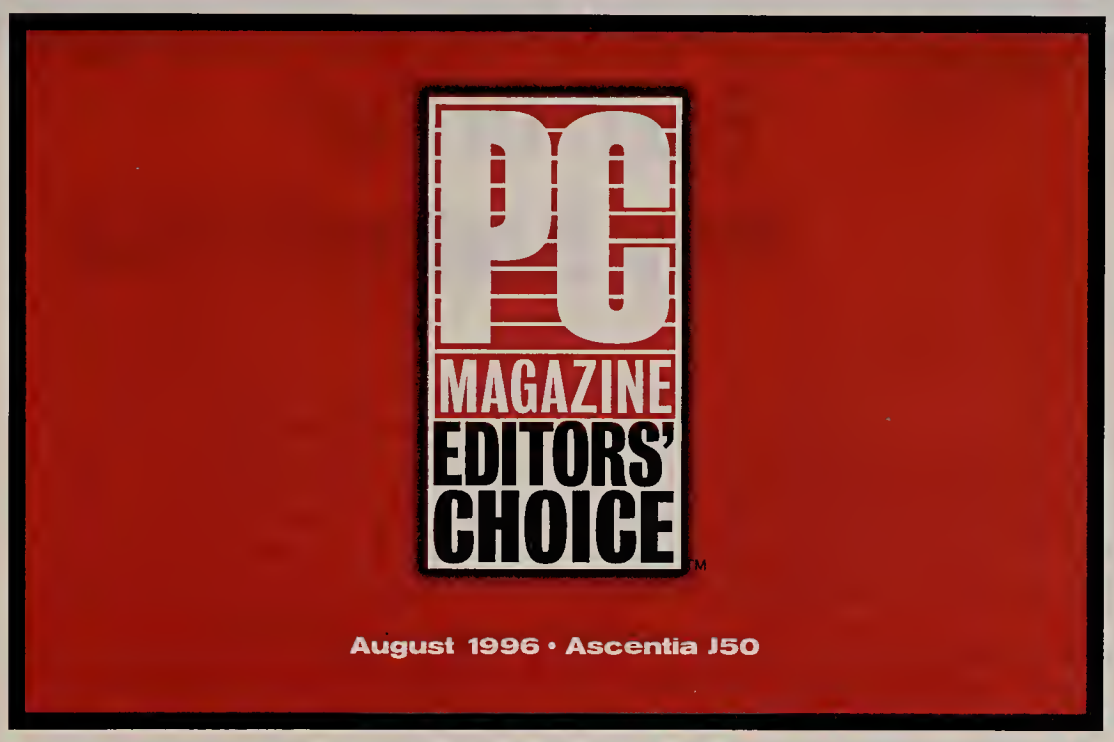

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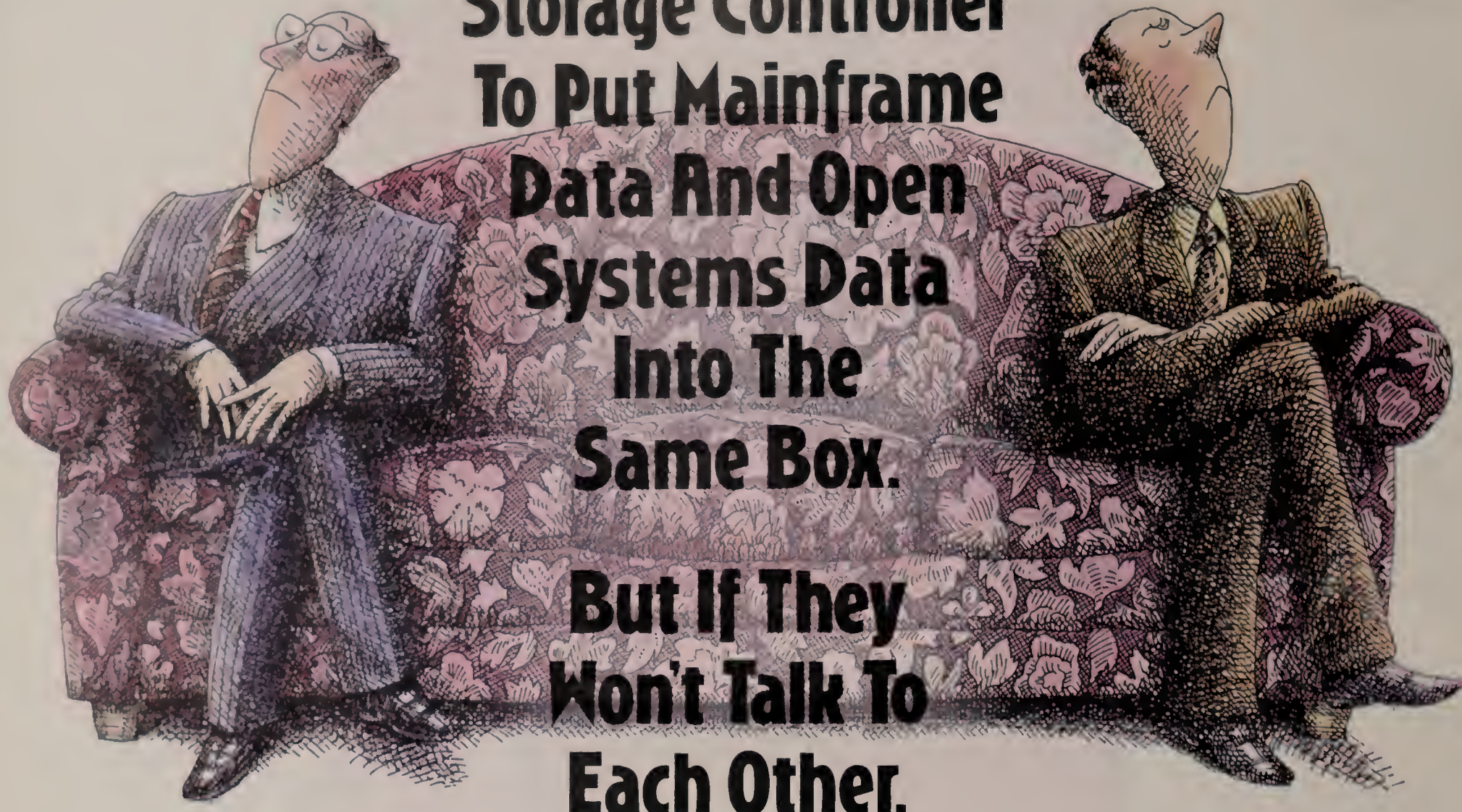

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Buyer's Guide

How the site search engines shape up:

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Intranet search engines rev up

PRODUCT REVIEW

A review shows that any of five tools can make a site better, with Open Text's LiveLink scoring best

By Chris DeVoney

If information is money, the Internet and the corporate intranet are gold mines. The problem is letting your customers and users mine that data. An emerging category of products, known as site search engines, can prove to be valuable tools for extracting the nuggets from the muck.

The new engines differ from Internet search engines such as AltaVista or Yahoo, which are sites themselves that index publicly available World Wide Web sites and let users find items on the Internet. The new site search engines are software housed at the Web or intranet site, and they allow users to search the documents that are indexed at that site.

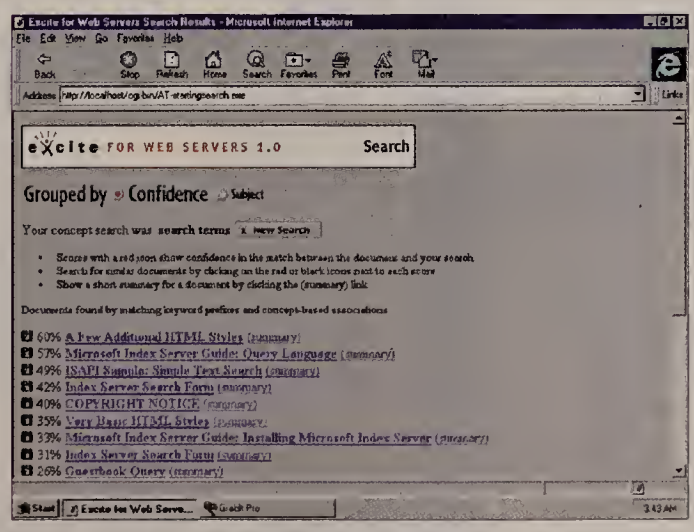
In this review, we focus on five site search engines: Excite, Inc.'s Excite for Web Servers 1.0, Microsoft Corp.'s Index Server 1.0., Netscape Communications Corp.'s Catalog Server 1.0 and Open Text Corp.'s LiveLink Search 6.0.5. We also reviewed Frontier Technologies' CyberSearch, which is part of the company's complete intranet package — Intranet Genie — because it is based on the Verity, Inc. search engine.

The good news is that all of the engines are excellent candidates. However, the products have some meaningful variations in terms of their features, and Open Text edges ahead of the pack because it searches almost all types of documents.

How engines differ

Although the details vary, site search engines work almost identically. Most search engines are administered locally or remotely through browsers. The engine builds an index of the files at designated locations. All engines can index documents in multiple locations on the same server, and most index files on multiple servers.

Intranet search engines rev up, *page 96*



Excite offers familiarity but limited index and search capabilities

Excite's Excite for Web Servers 1.0

Grade: C+

Strengths: Multiple platforms, concept-based searches, low price

Weaknesses: No searching by number or date, indexing limited to HTML and text documents, doesn't search multiple servers

One of the best features of Excite for Web Servers 1.0 is that the program is virtually identical to its well-known Internet search site. It runs on a broad range of servers and has a generous license fee (it's free), but support costs

Search engine grades, *page 96*

Intranet search engines rev up

CONTINUED FROM PAGE 92

All search engines index Hypertext Markup Language (HTML) and plain-vanilla text files. But handling other types of documents may be important on corporate intranets. Some engines search common Microsoft Office or Corel Corp.'s Office documents (letters, reports, spreadsheets, presentations). Some engines also index Adobe Systems, Inc.'s Portable Document Format (PDF) files — used in electronic and Web publishing — and electronic mail and even Internet newsgroups.

All search engines are accessible from browsers such as Netscape's Navigator or Microsoft's Internet Explorer. The basic search can be for keywords and/or concepts. Keyword searches look for literal matches, and concept searches use a thesaurus to match related terms. For example, a concept search for "sports" could match the term "sporting goods" as well as "baseball" or "swimming."

Most engines offer users advanced features to hone searches. The common features are Boolean searches (and, or, not), exact string matching, proximity searches (a word or phrase located near or within so many words of a second word or phrase) and special handling of searches that involve numeric information or dates. Some engines also search on specific items, such as a Microsoft Excel spreadsheet's author name or document title or the document's file size. International corporations — or those with multiple language sites — may find non-English language support important.

Conclusion

For now, Microsoft's Internet Information Server (IIS) 2.0, intranet or Internet users should use Index Server. Excite is free and can be used anywhere, but Netscape's Catalog Server offers the best bang for the buck. The special case is indexing newsgroups and mail, in which case only LiveLink Search works.

Although all site search engines work reasonably well, they are also undergoing constant improvement. Most engine publishers are planning new versions for release by early next year. Expect the engines to work faster, offer even more search features and index more types of documents to better suit your corporate Web or intranet needs. ■

DeVoney is a reviewer in Seattle. He can be reached at cdevoney@connect.com.

How we tested the search engines

To test the engines, we constructed a model Web site of approximately 2,000 HTML 3.0 pages with accompanying GIF graphics. The pages were housed on two different computers. The first was a Compaq Computer Corp. ProSignia with a 150-MHz Pentium, 64M bytes of RAM and a 2G-byte SCSI drive. The second computer was a Compaq ProLinea server running dual 166-MHz Pentiums, 128M bytes of RAM and two 2G-byte Fast/Wide SCSI drives in a mirrored configuration.

Both machines ran Windows NT Server 4.0, or NT Server 3.51 if the product was incompatible with 4.0. The site search engines were tested against either Microsoft IIS 2.0 or Netscape Enterprise Server 2.0.

Microsoft Index Server 1.0

Grade: B

Strengths: Performance, ease of use, flexible searching and indexing

Weaknesses: Limited to NT platforms, no concept searches

Fast and capable, Microsoft Index Server 1.0 is easy to install and use. Like Catalog Server, Index Server offers virtually all standard and extended search criteria and finds data sitting in any HTML/text pages and Office 95 files. Index Server searches files by name, size and data as well as by Office document attributes such as title or author.

Index Server can maintain a single or separate index for documents in multiple directories or on different servers. Index Server also relies on NT security to keep users from finding documents in groups in which they don't belong.

Index Server setup is virtually painless. Administration, through a server-based program or remotely by browser, is about as straightforward as possible.

Although the results can be viewed by any client with an Internet browser, Index Server only works using NT machines with Microsoft's IIS. If running your site from an NT server isn't a problem, Index Server's capability and inexpensive price (it's part of NT) make it an excellent choice.

Open Text LiveLink Search 6.0.5

Grade: A-

Strengths: Multiple platforms, flexible searching and indexing of most document types

Weaknesses: Price, complexity

Open Text's LiveLink 6.0.5 is agnostic when it comes to operating systems, machines and Web browsers. It's a document-based search engine that includes a copy of Netscape Commerce Server. The product offers document searches with a broad range of standard and special search features.

LiveLink Search works on a bevy of documents, which include HTML, text, Microsoft Office 95, Adobe PDF files, Internet newsgroups and Internet mail files. LiveLink Search courteously coverts the non-HTML documents on-the-fly so that the server doesn't need significantly more working space when producing an index.

The indexing speed and size is on par with other engines, as is the search engine speed. The configuration is more complex than most other servers.

LiveLink is recommendable when it is linked with its other LiveLink collaboration tools, used for wide-area workflow and project coordination control. For general search capability, LiveLink Search may be overkill.

Search engine grades, *page 100*

Search engine grades

CONTINUED FROM PAGE 95

about $1,000. Its major problem is the program functions identically to its site.

As far as searches, Excite is a good engine for intranet and Web sites that use HTML and text documents. It offers enough Boolean operators to narrow broad searches and is one of the few engines that handles conceptual searches. Indexing and search response times are good.

However, Excite's weakness is its age. The product doesn't index Office documents nor does it search on numeric ranges or calendar dates such as more recent search engines. Also, Excite doesn't easily handle files stored on multiple servers.

Although our initial Windows NT 4.0 required some manual coaxing, a special NT version released late last month fixed our installation problems. Expect a new version (1.1) soon that will fix other 1.0 shortcomings. Excite remains a comfortable, familiar choice for corporate Web sites.

Netscape Catalog Server 1.0

Grade: B+

Strengths: Multiple platforms, handles many file types, shows "What's New"

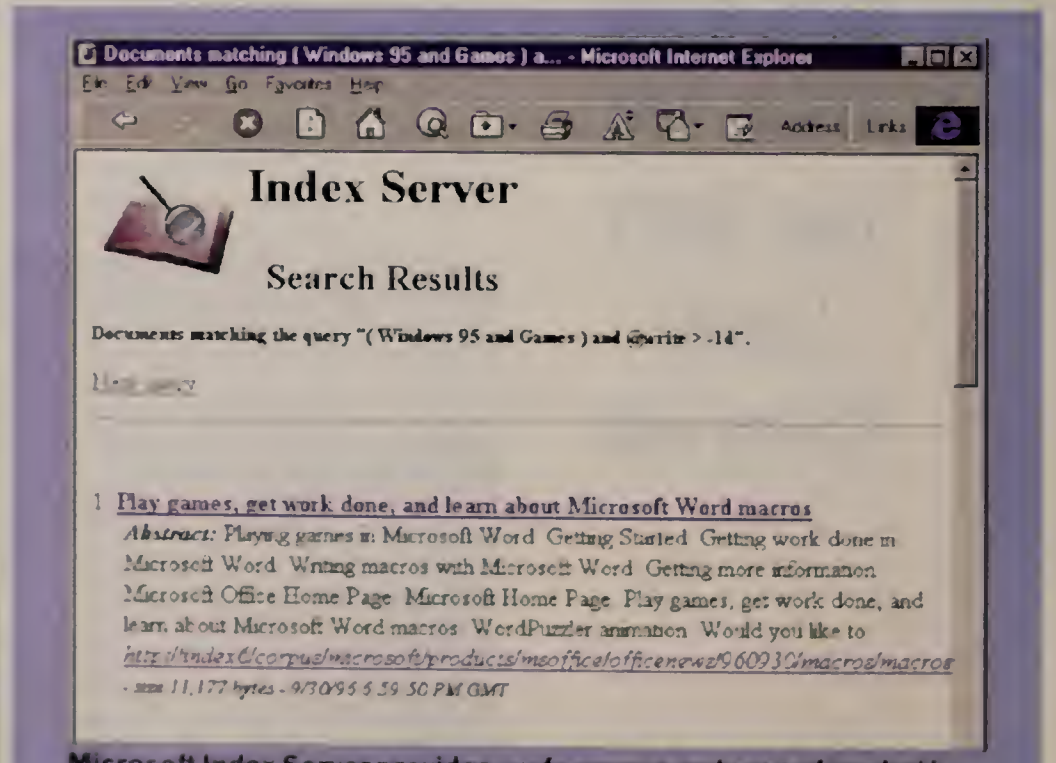
Weaknesses: No concept searches, complex administration

Flexible and fast, Netscape's Catalog Server 1.0 serves up Web pages and enterprise data with equal aplomb. Running on a broad array of servers, Catalog Server offers all of the standard and many of the popular extended search criteria.

Catalog Server is excellent at its corporate intranet role. The product indexes HTML/text pages and the corporate data in Microsoft Office 95 files, Corel WordPerfect, Lotus Development Corp.'s AmiPro and Adobe PDF files. It can also maintain different indexes for different classes of users so the sales force can't search documents in the finance department.

Catalog Server is the only server that provides out-of-the-box "What's New" and "What's Popular" Web site capabilities, which usually appeal more to Internet than intranet use.

Catalog Server works with any Web server but integrates best into Netscape's Commerce or Enterprise servers. The administration is more complex than other servers and is handled through the Netscape browser, which has an annoying drawback. The server's installation is virtually turnkey. But to configure the server, you often must enter long directory and Hypertext Transport Protocol paths to files. Because the browsers don't offer a Browse button to peruse directories, we often used Windows Explorer to locate the paths and then tediously typed in the names.



Microsoft Index Server provides performance and ease of use but is limited to the NT world

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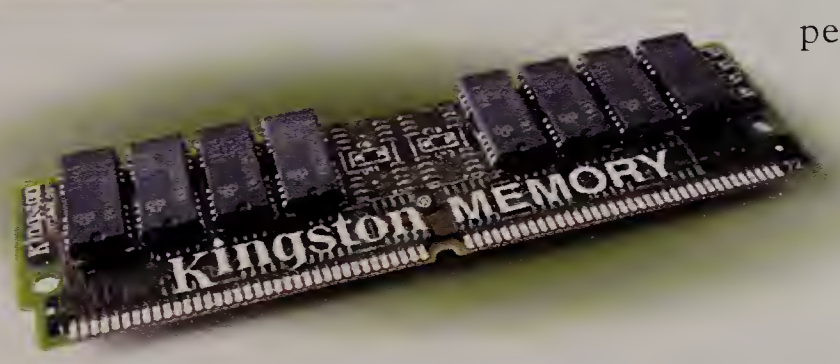

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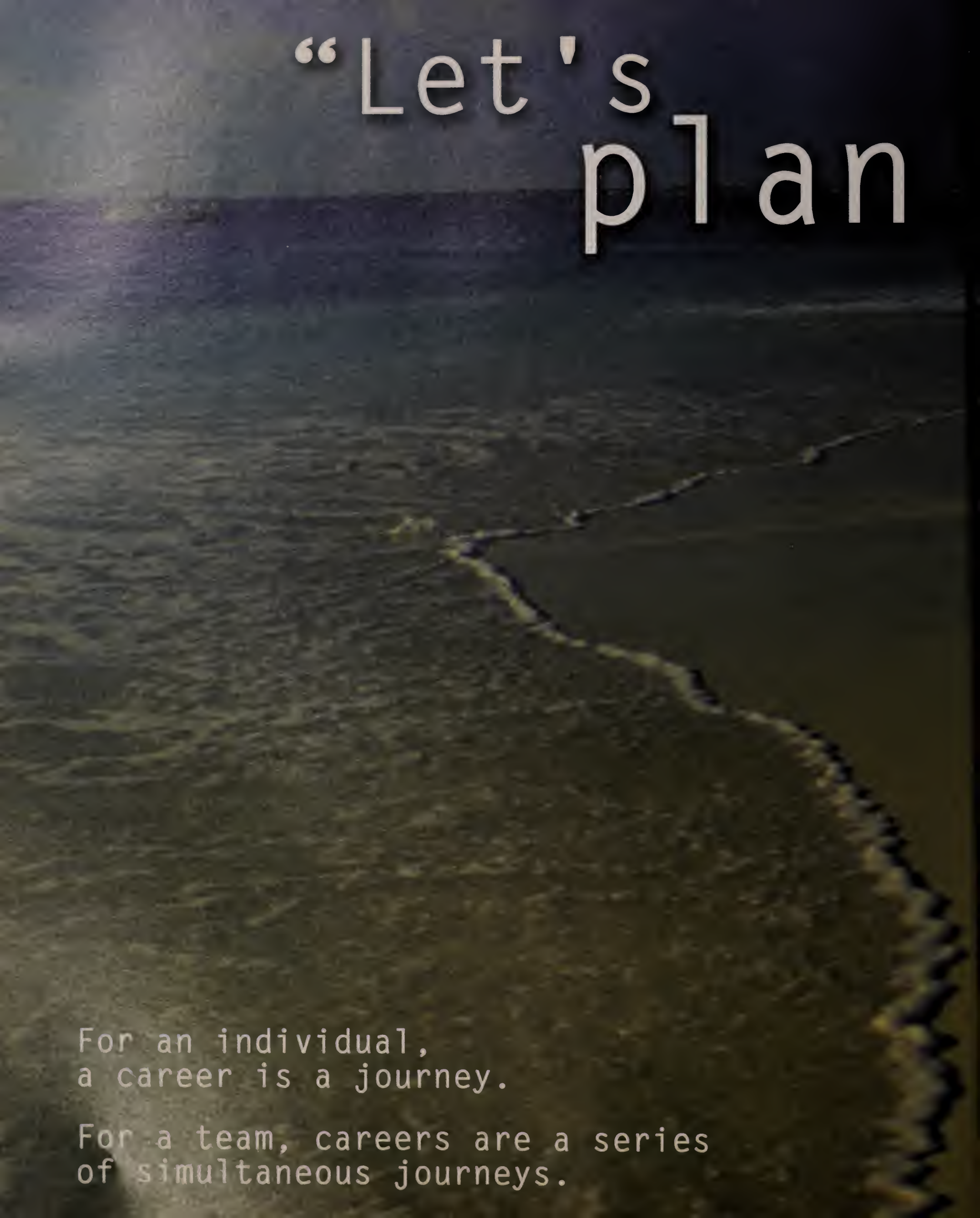
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Search engine grades

CONTINUED FROM PAGE 96

Frontier Intranet Genie

Grade: B-

Strengths: Doubles as Internet and intranet search engine, works in peer-to-peer environment

Weaknesses: Works only with Windows 95 and NT, for use with only Intranet Genie, limited non-English language support

Frontier's Intranet Genie is a complete intranet authoring and Web system that includes CyberSearch, which is based on Verity's search engine. Doubling as an Internet and intranet search engine, CyberSearch rates favorably.

Intranet Genie works on Windows 95 and Windows NT (workstation and server), which makes it the only engine that works in a peer-to-peer environment. The product includes Web, news and mail servers, Web design tools, HTML document converters and client software.

CyberSearch ends up a supercharged version of the original engine. The index and retrieval speed is good. The major difference is that CyberSearch is program-based, not browser-based. As such, the user interface is more complex, but the basics are easily learned.

CyberSearch should be considered only as part of an intranet solution addressed by Intranet Genie. If your company needs a light- to medium-size intranet site, Intranet Genie will work well. If you already have a different server, look for a different search engine than CyberSearch.

Others in the works

Although we contacted all the major makers of search engines, several don't appear in this review.

Verity didn't submit a copy of its search engine, but its engine is part of the Intranet Genie, which is reviewed and IntraNet Solutions, Inc.'s (www.intranetsol.com) Intra doc 2.0, which was announced in late September.

Excalibur Technologies Corp.'s (www.excalib.com) Retrievalware was submitted but couldn't be reviewed by our deadline.

Intranet version of AltaVista

Want the same engine that indexes more than 30 million Web pages and performs more than 18 million searches a day? You can, for a price.

Digital Equipment Corp.'s first version of its AltaVista Search Intranet Private Extension is now available for corporate intranets. The product operates behind corporate firewalls to index data on all company Web and file servers.

This first version supports only HTML and ASCII text, but future versions will index common Office documents and E-mail messages. It runs only on 64-bit Digital machines, such as the $500,000 to $1 million AlphaServer 8400 running Digital Unix. Digital offers two versions: a Very Large Memory (VLM) version intended for machines with 2G bytes or more of main memory and a non-VLM version for smaller machines.

The VLM version, which handles terabytes of data and thousands of users, costs $69,999.95. The non-VLM version costs $15,999.95. Digital (www.altavista.software.digital.com) also plans a version for Intel platforms running NT.

Ross Greenberg

Psst! Wanna know how to get your Web page noticed?

Like you, I have a company image, product or service I want to promote — sell the hell out of — on the World Wide Web. I want anybody with a browser to find me, be impressed with what I'm offering and throw gobs of money my way.

It's the American way. There's no longer a need for a better mousetrap. Get a better Web page, with more and higher hits on search engine results pages. The world will beat a path to your door.

You may already have a Web page with low hit numbers, or you're thinking about getting a really cool domain name to plaster all over your ads with a "www" in front of it. A little forethought makes a big difference.

Some simple steps can get you listed higher on search engine pages so more potential customers will find you and be entirely impressed with what they see.

Be your own potential customer

Go out there and search out your competitor's product. Use your favorite search engine(s). Think like a potential customer, and look for solutions for their problems, not for your favorite features. Your competitors are doing that, too. Examine the Web pages that spring forth from your search. You want your page on top of those lists. Keyword and title selection is the way to the top.

Know your search engines

There are two basic types of search engines: standard search engines and deep search engines. Understanding how they work gets the best results.

Standard search engines, such as Yahoo, require careful selection of the categories and keywords people use to find your page — someone looking for data warehousing might not look for off-line backup, for example. You have to select it, though. And Yahoo allows only two categories. Make them count.

Deep search engines, such as AltaVista and Webcrawler, are easier for uniform resource locator (URL) entry. Only a home page URL is entered by your webmaster, and the search engines's spider does the rest, indexing everything on the home page and all its links, too.

An entire web site indexed and cataloged with a single mouse click. That sounds very cool, right?

Search engines are dumb

Well, spiders don't understand concepts. Unless your concepts or methods and product uniqueness are explicitly mentioned, deep search engines will never see them. "New Version" stinks; "New Graphical Compression Engine" doesn't.

Make your page's title self-explanatory — spiders love titles — and give heavy weight to them compared with the rest of your text on the page.

"Harvey's HomePage" means nothing, and nobody will search for just Harvey. "Harvey's Chinchilla Compression Packers" will pop up for those looking to transport their rodents economically and will pop to the top of the list.

Stick as many keywords into the title as will fit and still make a nice title — remember it gets displayed as people browse on through. My own hits tripled with a simple change on my home page title.

Both kinds of search engines tend to stick pages with equal weight in alphabetical order. So a title of "Acme's Widgets" will be listed higher than the same page titled "Widgets by Acme."

Madness

Give deep search engines as much help and as many hints as you can — they're only computer programs, after all. The special Hypertext Markup Language tag is such a hint. It's your job to tell deep search engines what you consider important. Most of them allow tons of meta-keywords, so go nuts.

Repeat important keywords for some extra weight. Comment phrases can also bump you up the search engine list if used judiciously. Frequent repetition is cause for some deep search engine's rejection. Rumor is the magic threshold number is seven repeats, by the way.

Use plurals! Usually, plurals include the singular. Add in extra keywords when this isn't the case. Should you use virus or virii or viruses as keywords? Why not all three?

Simple things such as these can help your page get placed higher on search engine results pages and found more frequently.

And, guess what? Your competition is already doing it. ■

Greenberg is a software developer in Bovina, N.Y., who specializes in Internet and security products. He wants to hear about your cool applications. You can reach him at greenber@ramnet.com.

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Computerworld Editorial Calendar

Aug. - Oct., 1996

Issue Dates	Ad Closings Color*	Ad Closings B&W	Editorial Features	Show Distribution & Ad Readership Study Issues
Aug. 5	July 19	July 26	**Closer Look:** E-mail integration Approaches to the thorny problem of making multivendor e-mail environments work together	
Aug. 12	July 26	Aug. 2	**Buyer's Guide to Internet Security:** Corporations may be flocking to the Internet, but they are doing it with a wary eye. Fear of hackers and other security concerns have kept the corporate world from taking full advantage of the Internet's capabilities. This Buyer's Guide will look at firewall products and other technologies designed to support robust but secure Internet applications.	
Aug. 19	Aug. 2	Aug. 9	**Closer Look:** Object Databases **IS Leadership Series Supplement**	**Object World** San Jose 8/20 - 8/22 — Starch Study
Aug. 26	Aug. 9	Aug. 16	**Buyer's Guide to PC LAN Management Products:** How do you keep the departmental systems running without dedicating an IS staff member to tasks such as backup and access management? A variety of products help IS off load those responsibilities, and they work in cooperation with enterprisewide systems management packages. This Buyer's Guide will look at the strengths and weaknesses of some of those LAN-level management products, and explore user needs. **Monthly Supplement: Intranets** **Special Report:** The Future of Computing	**CA World** New Orleans 8/25 - 8/30
Sept. 2	Aug. 16	Aug. 23	**Special Report:** Salary Survey Computerworld's annual salary survey captures salary levels for IS professionals from the CIO to help desk operator. A major undertaking, the survey results are broken down by company size, region and industry.	
Sept. 9	Aug. 23	Aug. 30	**Closer Look:** Netware **Special Supplement:** Network 25 A joint Computerworld, Network World special 60-page magazine profiling outstanding users of networking technology from around the world. In addition to a listing of 25 outstanding organizations and detailed company profiles, the issue will examine regional differences in networking, trends in technology and useful advice on emerging networking issues.	**Networks Expo** Dallas, 9/10 - 9/12 — Starch Study **Mobile World** Boston, 9/10 - 9/12 **Internet Commerce Expo** Anaheim, 9/10 - 9/12
Sept. 16	Aug. 30	Sept. 6	**Buyer's Guide to Internetworking:** With demand for bandwidth still on the rise, users are turning to technologies such as fast Ethernet and token ring switches. This Buyer's Guide will look at how users are addressing the bandwidth challenge and which products best meet their needs. **IS Leadership Series Supplement**	**Networld + Interop** Atlanta 9/18 - 9/20
Sept. 23	Sept. 6	Sept. 13	**Managing:** The best new books for IS managers **Special Report:** Top Web sites for IS managers **Monthly Supplement: Intranets**	
Sept. 30	Sept. 13	Sept. 20	**Buyer's Guide to Groupware:** The old groupware model went out the window with the emergence of the World Wide Web. Now, products such as Lotus Notes, Microsoft Exchange and Novell Groupwise XTD are being repositioned to act as gateways to the Internet. This Buyer's Guide will look at how those server-based products are handling the transition, and at some of the Web-based alternatives being offered by startups.	**SIM Fall Conference** San Francisco 9/29 - 10/2
Oct. 7	Sept. 20	Sept. 27	**Buyer's Guide to RISC Servers:** Enterprisewide applications often are being driven by multiprocessor servers based on Reduced Instruction Set Computer technologies such as PowerPC, Alpha, Sparc, MIPS and PA-RISC. This Buyer's Guide will explore the challenge of running the corporation on these products, and the strengths and weaknesses of some of the key vendors.	**Unix Expo** New York 10/8 - 10/10
Oct. 14	Sept. 27	Oct. 4	**Closer Look:** Videoconferencing Is it really ready for the desktop? A look at the state of the art in the PC space.	
Oct. 21	Oct. 4	Oct. 11	**Buyer's Guide to Notebook PCs:** They are the core computing platforms for a growing percentage of corporate users. Designed to work in hotel rooms, airports and in the office, notebook PCs pack the punch of desktop systems but carry their own set of technical challenges. This Buyer's Guide will examine the strengths and weaknesses of leading notebook vendors, and explore some of the issues that user organizations face when they roll out notebook-based strategies. **IS Leadership Series Supplement**	
Oct. 28	Oct. 11	Oct. 18	**Closer Look:** Java Development **Monthly Supplement: Intranets** **Annual Computerworld Campus Edition** (actual mail date October 31)	**Software Developers' Conf.** Washington, DC 10/29 - 10/31

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Computerworld Editorial Calendar

Nov. - Dec., 1996

Issue Dates	Ad Closings Color*	Ad Closings B&W	Editorial Features	Show Distribution & Ad Readership Study Issues
Nov. 4	Oct. 18	Oct. 25	**Buyer's Guide to Network Operating Systems:** Complex, enterprisewide applications need a robust network operating system to be working in the background. This Buyer's Guide will explore the NOS buying process, and examine how well NOS products such as Windows NT, Netware, Banyan Vines, and OS/2 Warp Server support the corporate user.	
Nov. 18	Oct. 25	Nov. 1	**Annual Computerworld Skills Survey:** Where is the talent going? What skills do you need to succeed in an IS career? This expanded feature details which IS skills are most in demand — by region, industry and technology — and which ones are bringing IS professionals the greatest rewards.	
Nov. 18	Nov. 1	Nov. 8	**Buyer's Guide to Multimedia PCs:** The day of the simple DOS-with-floppy-and-hard-drive PC has long passed. Today's applications demand video and sound, not just a blinking cursor. New generations of processor chips pack power, and they are tightly integrated with video and sound technology, high-speed CD-ROMs, speakers and huge-capacity disk drives. This Buyer's Guide will examine the high-end desktop product offerings of key vendors, and explore the technology path being carved out by the industry at large. **IS Leadership Series Supplement**	**Comdex Fall** Las Vegas 11/18 - 11/22
Nov. 25	Nov. 8	Nov. 15	**Closer Look:** Outsourcing/systems integration **Monthly Supplement: Intranets**	Starch Study
Dec. 2	Nov. 15	Nov. 22	**Buyer's Guide to Decision Support Tools:** CEOs and other executives are demanding new levels of dynamic access to corporate data. They need reports that will help them make strategic decisions. That leaves IS managers to implement technologies such as OLAP and ROLAP and links that deliver relational data through new vehicles such as the World Wide Web. This Buyer's Guide will examine some of the key decision support tools, and explore how user organizations are leveraging new technologies to support executive decision making.	**DB Expo** New York 12/2 - 12/6
Dec. 9	Nov. 22	Nov. 27**	**Closer Look:** Software license management **IS Leadership Series Supplement**	**Database/Client Server World** Chicago 12/10 - 12/12
Dec. 16	Nov. 29	Dec. 6	**Buyer's Guide to Futuristic Technologies:** Technologies such as virtual reality display devices and sophisticated pagers may have a place in many corporate applications. This Buyer's Guide will examine some of advanced technology products that actually may prove useful for IS managers and their staffs.They aren't just for fun and games anymore. **Monthly Supplement: Intranets**	

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Issue Dates	Ad Closings	Custom Publications	Show Distribution & Ad Readership Study Issues
Aug. 12	May 31	**White Paper:** **Supply Chain Management** (part 3 of 4-part Manufacturing Directions Series)	
Aug. 19	June 21	**White Paper:** **RAID**	**Object World** Starch Study
Sept. 2	June 21	**White Paper:** **Financial & Human Resource Applications** (part 3 of 4-part Enterprise Software Directions Series)	
Dec. 2	Sept. 27	**White Paper:** **Network & Systems Management: Adopt for Change or Get Out of the Way** (part 4 of 4-part Manufacturing Directions Series)	**DB Expo**
Dec. 9	Sept. 20	**White Paper:** **Systems & Network Management** (part 4 of 4-part Enterprise Software Directions Series)	**Database/Client Server World**

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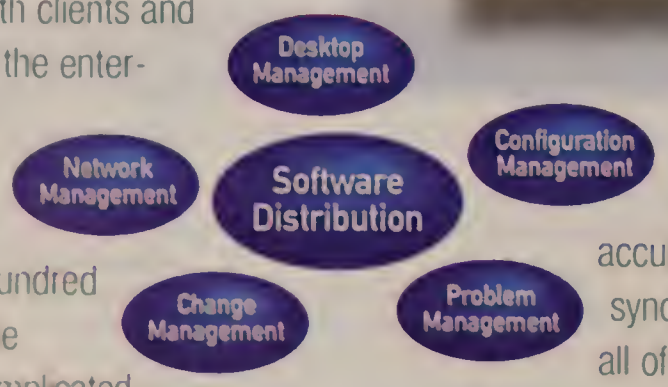

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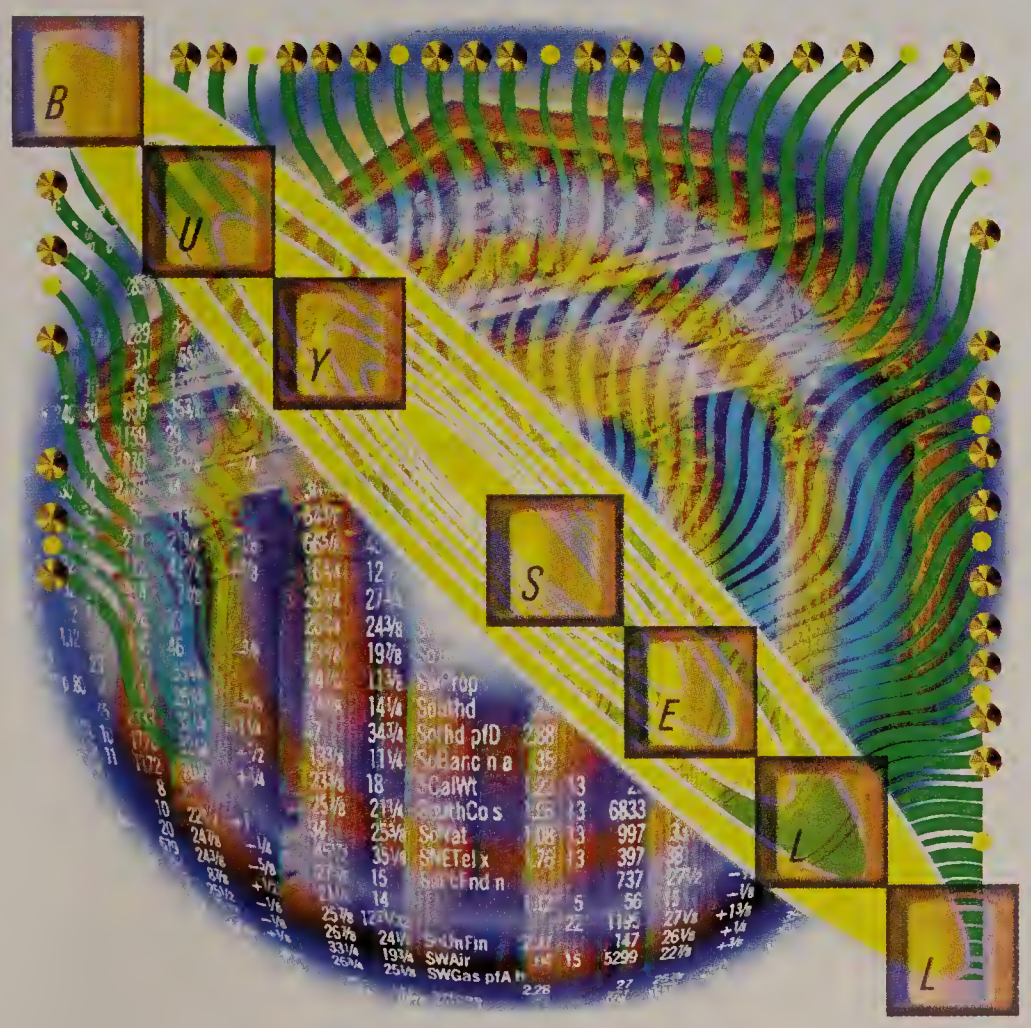
In Depth

the exchanging of the guard

As discount stockbrokers lure investors with cheap Web trading, old-line firms counter by bringing their traditional strengths to the new electronic medium. It's the carnies vs. the librarians, and billions of dollars ride on the outcome.

BY STEWART L. DECK



RALPH KELLNER

There's a battle being waged. It's fought over customer loyalty, and it features price gouges, enticing sales pitches and colorful inducements.

No, this isn't another fare war among airlines. This one is being fought right on your desk and on your PC. It's being waged for your paycheck, your nest egg and your retirement fund.

Maybe you've seen ads on World Wide Web pages for ETrade Group, Inc.'s services. Or for Lombard Brokerage, Inc., touted as "the No. 1 online discount broker by Barron's and in a poll conducted by *The Silicon Investor*." Or perhaps you've found the Datek Securities Corp. site, with stock trading commissions as low as $9.99 per trade (for uniform resource locators of all firms in this story, see chart next page).

If those names aren't familiar, what about Charles Schwab & Co.? According to Tom Taggart, a spokesman for the giant discount broker, 24% of Schwab customers' total trades are made electronically through PC-based services, including the company Web page. For the month of June, Schwab reported more than $20 million in online-based commissions. In August, Schwab received an average of 15,500 PC-based trades per day. According to industry observers, almost half the trades on the Web are placed through Schwab.

There are plenty of sites on the Internet where you can place stock trades. But what about advice and insight? Do investors have online resources for financial information, or must they depend on tips on America Online's Motley Fool, provided by shadowy figures cloaked in anonymity? Traditional brokers are starting to rush to the aid of lost investors, selling them advisory expertise and fighting the discount firms in the process.

Although more traditional brokers such as Merrill Lynch & Co. and Prudential Securities, Inc. aren't in the middle of the Internet stock trading hubbub, they and many other brokerages and investment houses have staked out territory on the Web.

"It's very difficult, if not impossible, for the established investment houses to attract customers by competing with the deep [online] discounters on price," says Peter Crane, a financial writer and editor at IBC Financial Data, Inc. in

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the exchanging of the guard

CONTINUED FROM PAGE 105

Ashland, Mass., and author of the forthcoming book *Mutual Fund Investing on the Internet*. "Instead, firms like Prudential and Smith Barney and Merrill Lynch are attracting visitors and customers using their reputations as reliable and secure places to invest."

Customers are drawn to these sites by education and counseling, Crane explains. That contrasts with the flashier, midway-like "Buy now!" atmosphere of some of the discount brokers' sites. Merrill Lynch's site, for example, is chock-full of savings strategies and advice, retirement-fund calculators and college-fund formulas.

Some investment houses believe that their strength comes from the personal touch of individual investment counselors. Their Web sites guide visitors to regional offices and toll-free telephone numbers to put them in touch with live staff members.

"We believe very much in the abilities of our staff, so our Web site helps us quickly connect potential customers with them," says Pat Gordinier, a systems specialist at Ferris, Baker, Watts, Inc., an investment firm in Baltimore.

This sounds like an easy way to rationalize a plain-Jane Web site, but a Ferris, Baker, Watts investment counselor/broker concurs that the value of the firm comes from its personalized service. "People will save a little on commissions by trading online," says Will Benassi, a longtime adviser at the firm. "But where people lose money isn't in the 2% or 3% commissions that brokers charge. It's in senselessly taking capital gains or losing 15% to estate taxes. People need consultation, especially hand-holding when the market starts falling."

Steve Certo, a market analyst at Wheat First, Butcher, Singer, Inc., an investment firm in Richmond, Va., agrees. "A majority of our clients do business with us because of the advice they get," Certo says. "These people may not be that comfortable using the 'net; they value a phone call or information through the mail. That's probably why we haven't rushed to put together a big Web project yet."

In a falling stock market, online investors tend to panic more than people who invest through a broker, Crane says. "With a broker, investors have someone to allay their fears, calm them down and keep them from rashly selling. Brokers and advisers used to be seen as pushing people to churn stock by trading it. Now, online investors are re-evaluating their portfolios every day and making trades — brokers are the ones counseling people *not* to trade," he says.

A bull market

The past year's explosion of online stock trading has coincided with a flood of new investors in equity markets and a bull market. That combination may blind some firms to the fact that they're losing clients who are going off to trade online, says Roxane Googin, a Wall Street analyst at Grunthal & Co. in Beverly Hills, Calif.

"Some investment firms have their heads in the sand," Googin says. "These new online brokerages are growing so fast, someone's losing clients."

Googin says the more established firms can differentiate themselves by offering advisory and analysis services that the discount online services don't have. "It's like going to a doctor — you're asking for someone's expertise in an area where you can potentially hurt yourself." But online trading services may quickly cross over into this advisory territory, especially if the market turns downward, Googin says. Online services could start hiring researchers to provide commentary for their sites and charge visitors a subscription fee for this information, the way *The Wall Street Journal* and ESPN offer premium information on their Web sites.

Crane doesn't think that is likely. "The larger, established firms are the only ones that can afford to continue to build and update the educational aspects of a site. I think it's more likely that you'll see some of the smaller online services acquired by larger firms."

No trading, just content

Many investment banks have Web sites, but many of those are content-thin. After visitors skim through an overview of the company, its services, company press releases and office locations, they're done. Hambrecht & Quist, Inc.'s site is an exception. The San Francisco-based firm that brought Netscape Communications Corp. and UUnet Technologies, Inc. public wanted to demonstrate that it had technology-based interests. "We wanted our Web site to help us stand out as *the* investment bank for Internet technologies," says Marta Goldstein, a managing editor in research and the firm's Web site coordinator.

Visitors to the site can read a monthly channel report and excerpts from all of Hambrecht & Quist's research reports. Analyst and company director bios, schedules of upcoming technology conferences and industry news are all posted on the site. "Frankly, we use several parts of the site as a lure for our services," Goldstein admits. "It's a great PR tool and a nice way to start building a relationship."

While "building a relationship" sounds merely warm and fuzzy, it's the big gun in the battle for customers. The battle tactic with each sale, each site and each firm is to build relationships with customers. By building relationships, these firms hope to build up the company coffers and win the battle ■

Deck is a staff writer for Computerworld.

TRADING PLACES

A sampling of investment sites on the Web:

ONLINE TRADING

K. Aufhauser & Co.: www.aufhauser.com
Ceres Securities: www.ceres.com
Charles Schwab & Co.: www.schwab.com — *a giant in online trading*
Datek Securities: www.datek.com — *$9.99 stock trades*
EBroker: www.ebroker.com — *stock trades for $12*
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Hambrecht & Quist: www.hamquist.com — *lots of research excerpts*
Merrill Lynch & Co.: www.ml.com — *online account information available soon*
Montgomery Securities: www.montgomery.com — *online prospectuses*
Morgan Stanley: www.ms.com — *company overview, daily info*
Prudential Securities: www.prusec.com — *account info*
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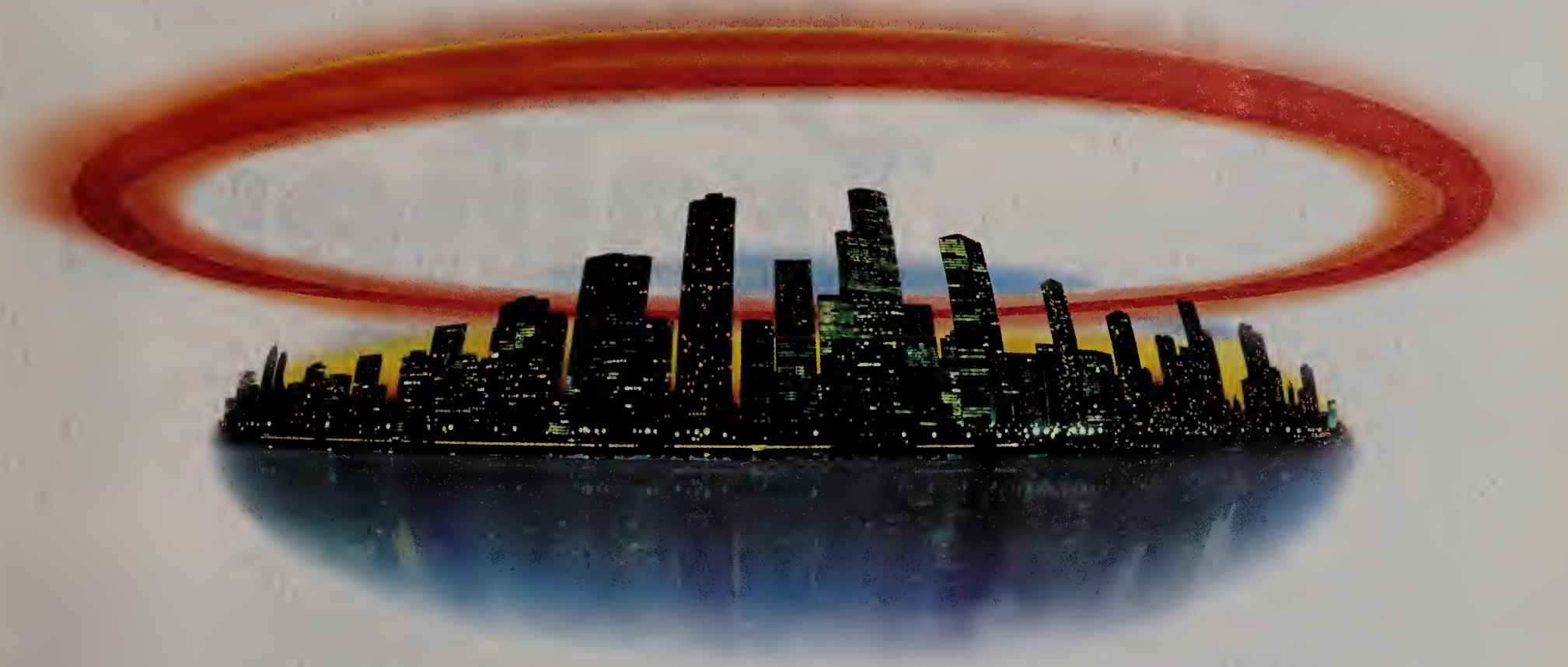

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Computer Careers

Two-Way Trainers

IS consultants must master cutting-edge learning to deliver stellar technology coaching. David Weldon, senior editor, Careers, asked one consultant to share his advice on which training investments will give big returns.

Glenn Miller

Miller is vice president of information strategy at Entex Information Resources in Ryebrook, N.Y.

With the talent pool for qualified, experienced information systems professionals fast evaporating, keeping internal staffs up to speed on the latest technologies is a major concern for nearly every IS manager. The success of IS consulting firms at balancing learning and coaching may suggest new approaches to training for internal IS shops.

CW: With new training resources, such as self-instruction and video- and computer-based training, how should training be approached?
Miller: You have to do a snapshot of the existing situation and current thinking. What skills must we focus on? What predictions can be made about future needs? Who are my best learners? What resources do I have? The organizational pressures to move quickly are considerable. This means that some training is project-driven and some is strategy-driven.

CW: What does that mean to in-house trainers?
Miller: These in-house groups must be leveraged better. To use them for generic training on "how to build a spreadsheet" doesn't make economic sense nowadays. However, with their mix of organizational knowledge, technology savvy and communication/interpersonal skills, they are the best candidates for stimulating the creative use of IS in an organization. Having them develop training sessions on "how to use the corporate databases in solving customer problems" would be a good use.

CW: How can you identify which skills will be in the highest demand?
Miller: Two ways. From the hiring trends for the past year, which showed fastest growth in help desk operators — at 9% growth over the previous year — network administration, client/server project managers, LAN managers and systems programmers — in that order.

Also, salary trends show greatest increases in year 2000 programmers, object-oriented programmers — salaries 20% to 25% higher than regular programmers — and Web-oriented programmers, such as [Hypertext Markup Language] and Java.

CW: What is the best mix of skills to focus training on?
Miller: This issue has almost been answered for us by the business units. They want *all* our people to have communications skills training, all the day-to-day support people to have in-depth technical training and all the business alignment staff (systems analysts, IT coordinators and specifiers) to have some business training — generally in their specific organizational function. The planning and strategic staff should have general and companywide business training to recognize opportunities to apply new technologies.

CW: How do you determine who is best-suited to receive what training?
Miller: In most cases, this is decided by the track nature of much of the training. If someone has completed three of the six required BackOffice certifications, then they are the best investment to complete the suite training. For newer and nontracked learning — such as ActiveX, Java and object-oriented programming — select staff on four criteria: interest, speed of learning, likelihood of early use and ability to teach/train others.

CW: What lessons can IS managers learn from your training efforts?
Miller: We focus training on generic skills vs. industry-specific skills because our centralized work must be portable and applicable in a wide variety of settings. For an internal IT shop, this would mean concentrating internal training on commonly used skill sets, such as design methods, interpersonal skills and questioning techniques. We have three tracks of generic skills: specific technologies, such as Windows 95; project management, such as rollouts and migrations; and planning. These tracks are oriented toward mainstream customer requirements. For an internal IT shop, this can be organized similarly, with an additional track in client relations skills. ■

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D. 1,000 – 4,999	❒	❒
E. 500 – 999	❒	❒
F. 100 – 499	❒	❒
G. 50 – 99	❒	❒
H. 20 – 49	❒	❒
J. 10 – 19	❒	❒
K. 1–9	❒	❒

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70. Mining/Construction/Petroleum/ Refining/Agriculture
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(c) OS/2
(d) Unix
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(f) Windows NT
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App. Development Products ❒ Yes ❒ No
Networking Products ❒ Yes ❒ No

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C. 5,000 – 9,999	❒	❒
D. 1,000 – 4,999	❒	❒
E. 500 – 999	❒	❒
F. 100 – 499	❒	❒
G. 50 – 99	❒	❒
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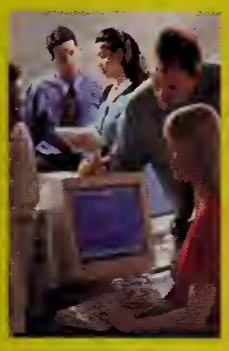

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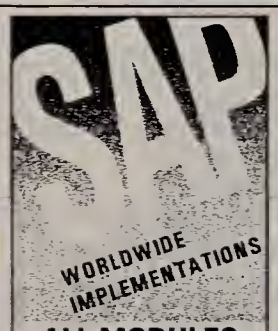

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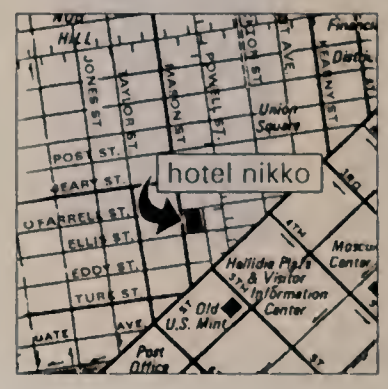

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Concurrent Sessions:

Candidate Selection: How to Pick the Right People
Dr. William Swan, President, Swan Consulting

The Critical Importance of Soft Skills and the "Invisible Assembly Line"
Todd Schmick, Priority Management Systems, Inc.

Immigration Issues
David P. Berry, Esquire, Berry & Appleman

Proactive Recruitment Techniques
Dave Drugman, President, Bay Cities Research, Inc.

12:15pm **Luncheon Keynote: Industry Trends**

Repeat of Concurrent Sessions

Town Hall Forum
John Younger, President, y-net

6:00pm **Program ends**

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Proactive Recruitment Techniques

Dave Drugman, President, Bay Cities Research, Inc.

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John Younger, President, y-net

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The candidates we seek will have 3+ years programming in C/C++ in a Windows NT or OS/2 Presentation Manager environment. Positions require experience with SQL and relational database design (DB2/2 or Oracle preferred).

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This person will direct the formal testing of all products created by our Development group. Individual must possess 5+ years experience testing and QA on medium to large scale systems. Additional requirements include 3-4 years management or technical lead experience with knowledge of testing techniques and tools. Should have specific knowledge of one or more of the following: Medicine, Insurance Claims, Computer Systems/Programming, Software Specification or Software Testing.

Network Administrators

Seeking self-starters with at least 2 years experience as Windows NT administrators. Certified administrators with OS/2 and Lotus Notes experience are preferred, but not necessary.

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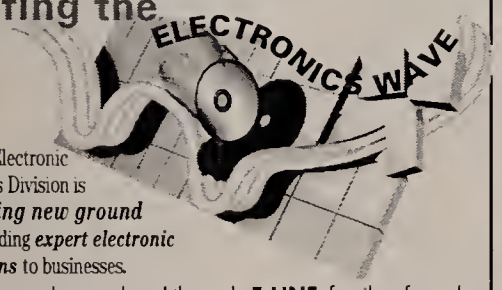

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Working with user representatives and product management of our Time and Attendance product line, you will analyze and design new programs and enhance existing ones. We look to you to set priorities, guide and motivate other team members, and supervise the development of specifications.

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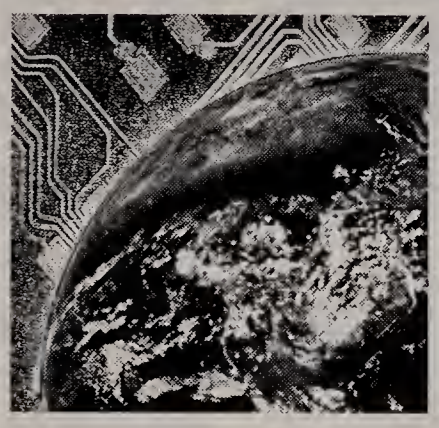

Opportunities in Cherry Hill, NJ

Lockheed Martin Services is a worldwide leader in providing technical services, operations and maintenance for the Government and leading businesses. Discover the challenge, opportunity and rewards of working in a leading edge team environment.

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Working for our Field Information Systems Department, the qualified individual will develop and maintain COBOL and PC FoxPro applications. This position includes active participation in all phases of the system development cycle (design, development, testing, implementation and support). There is opportunity to work with an exciting technical and results-oriented team.

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Programmer/Analyst

Opportunity to work for the Business Development Department requires a BS degree in Computer Science or equivalent and 2 years programming experience in database, C, UNIX shell and LAN environments. The qualified candidate will work with cost estimating, proposal development and production personnel to develop applications for data conversion and database management. Some systems administration and help desk support is required. Familiarity with systems administration (UNIX, NT, Novell, and Macintosh) is necessary. Individual must be willing to work overtime.

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For immediate consideration, please forward your resume indicating position of interest to: Lockheed Martin Services, Human Resources, Attn: CDR, 2339 Route 70 West, Cherry Hill, NJ 08358, FAX: 609-486-5162.

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• Definition and documentation of Navy or other military combat systems. Prepare computer program and equipment interface test plans and procedures. Requires a minimum of three years experience in a large scale engineering, computerspecification and development environment.

• Design, develop, test and document data analysis tools (using C). Present technical concepts to engineers and management written and orally. Requires minimum of two years experience to include C language.

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• Design, integrate, and test advanced distributed computing systems. A minimum of three years experience with UNIX, Posix, ADA and/or C++ symetric multi-processing experience a plus.

• Unix system support and administration for computing center network. Minimum 3 years experience as a Computer Systems Engineer for a UNIX or VMS based computer system.

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Senior Systems Analyst

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Please submit resume and salary history to
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KCS

KCS Computer Services is a premiere system integration, training, and custom software development organization. KCS is seeking Systems and Data Architects, Analysts, Programmers, and Communications Experts in Mainframe and Client/Server environments. In addition, KCS seeks industry experts in Banking, Healthcare, Manufacturing, and technical experts in Multimedia and MicroSoft. The following are typical skills required:

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- COBOL/CICS/NATURAL
- IMS/DB2

KCS also has an additional office in Cleveland.

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Phone (412) 823-8632
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http://www.kcscomp.com/

SOFTWARE ENGINEER. Experience in graphical user interface (GUI) networking applications. Extensive knowledge of database property manipulation techniques. Proven ability to work with C, XDDM, and Motif under VAX VMS and Digital Unix Operating systems. Demonstrated ability in using Microsoft Windows Development Kit (WDK). Proven track record in writing compact software. The job duties are Analysis of current procedures and problems in Telex and Cable Data to programmatic requirements, study existing systems to increase effectiveness, develop systems commands to add, delete, and modify user and supervisor level software. Develop Custom programs to meet requirements. Write software specifications. Requires B.S. in Computer Science/Engineering with 6 years of experience in software development. Send resume to Department of Labor, Job Order # GA 5816883, 1515 Johnson Road, Lawrenceville, GA 30243-1611 for the fastest consideration. Job Order Number 5816883.

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Hotel Nikko, San Francisco, California

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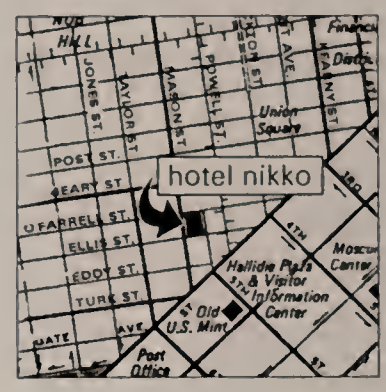

A Full Schedule of Contemporary Topics

7:30am **Continental Breakfast & Conference Registration**

Concurrent Sessions:

Candidate Selection: How to Pick the Right People
Dr. William Swan, President, Swan Consulting

The Critical Importance of Soft Skills and the "Invisible Assembly Line"
Todd Schmick, Priority Management Systems, Inc.

Immigration Issues
David P. Berry, Esquire, Berry & Appleman

Proactive Recruitment Techniques
Dave Drugman, President, Bay Cities Research, Inc.

12:15pm **Luncheon Keynote: Industry Trends**

Repeat of Concurrent Sessions

Town Hall Forum
John Younger, President, y-net

6:00pm **Program ends**

Selected sessions include:

Proactive Recruitment Techniques

Dave Drugman, President, Bay Cities Research, Inc.

To remain competitive, today's technical recruiters need to be aware of the latest trends in sourcing and proactive recruiting. This in-depth session from a leading expert will explore this critical topic and will help you put your resources and expectations into proper perspective.

Town Hall Forum

John Younger, President, y-net

In this session, you'll not only be able to propose your specific questions for open discussion, you'll learn of real world issues and solutions from your peers. You won't want to miss this rare opportunity as John Younger, an expert in the HR field, leads us through this modern discussion of your recruiting topics.

For more information, call the conference hotline: 1-800-488-9204

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SYSTEMS ANALYST

To qualify you must have at least 5 years of related experience in developing and supporting mainframe system applications. The successful candidate will have knowledge of MVS/JCL, COBOL, TSO, CICS and VSAM. Familiarity with EASYTRIVE, PMS series II/III and DB2 is a plus. Req#H4141.

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SOFTWARE ENGINEER to design. develop, implement and test object-oriented software systems for steel industry clients using C, C++, SGP, and X-Windows in UNIX and Windows environments on IBM-PC architectures; Design, develop and implement efficient algorithms in C and C++; Evaluate performance of computer systems, computer graphics, databases and object oriented data structures using concepts in neural networks, computer vision, computational geometry, mathematics, and computer modeling and simulation; Enhance company's Weight-Measure-Stencil (WMS) product and optimize applications through algorithmic improvements, innovations and networking, and logic controllers, data communications, TCP-IP and systems automation; Implement Internet/intranet systems for corporate networks using TCP-IP, FTP, Netscape, Relational Databases (Ingres, SOL), C, X-Windows, and UNIX and tools. Require: B.S. in Computer Engineering and two years experience in the job offered. M.S. degree in Computer Science with a demonstrated ability to perform the stated duties gained through previous work experience/graduate course work may be substituted for the B.S.C.S, degree and two years of experience. Salary: $47,300 per year, 8 am to 5 pm, M-F. Send resume to: Sid Mookerji, Software Paradigms, Inc., 6004 Bordeau Walk, Smyrna, GA 30082; Attn: Dept. HK.

SYSTEMS ANALYST. Analyzes user requirements, procedures and problems to automate processing or to improve existing computer systems. Design program specifications and to carry out the code development, generate unit test plan and be part of system integration and implementation team. Bachelor's degree in computer science, engineering or math-related and 2 years experience in job offered or as software specialist req'd. Two years experience of working on applications related to Manufacturing, Banking, Shipping and MIS support, working on migration projects, developing applications using COBOL, RDB, DecForms, FMS, All-in-1, CDD+, ACMS, DecSet tools, ORACLE, C, Rally, FQXLan, Vax/MVMS, working with Unisys (Univac), Unix and DOS environment. Must be able to travel. $41,000/year. Apply by resume to Georgia Department of Labor, Job Qrder #GA6021741, 2943 N. Druid Hills Road, Atlanta, GA 30329-3909 or the nearest Department of Labor Field Service Qffice.

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Programmer/Information Security Analysts
Database/Systems/LAN Administrators
Support Center Manager

For consideration, forward your resume in care of: Johns Hopkins Hospital, Office of Career Services, 600 North Wolfe Street, Houck 3rd Floor, Balitmore, MD 21287-1454; fax (410) 955-0890. EOE.

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Use your S/W application development and management experience to work with the industries leading companies in developing data applications for mobile customers. Your work with Internet, WWW, e-mail, client-server applications and distributed databases applications will make you an ideal candidate for this position. You need to possess a BSCS or equivalent degree and have 5+ years experience working at the application and/or middleware layer of S/W development or product management. Prior experience cooperating with other companies to provide applications to the Internet and information technology industry is a plus. Excellent communications skills and an enjoyment for occasional travel is required.

Internet Standards Engineer

Your knowledge of Internet, WWW, and Communications technologies provide you with the background needed to assume this technical position. You will be responsible for representing Nokia in the various world-wide standards organizations, such as IETF. You will work closely with Nokia's development organizations and development partners to thoroughly understand Nokia's mobile data technologies. You will use this in-depth knowledge to develop appropriate industry standards. You will need a BSCS, BSEE or equivalent degree and appropriate experience in a technical discipline to qualify for this position. Good communication skills and a desire to travel occasionally is required.

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You will design, build and manage the Wireless Data Server Systems Lab at Nokia's Westlake, Texas Office in the Dallas/Fort Worth area. Your development and systems management experience with UNIX and NT systems and TCP/IP based LANs provide you with the background needed for this unique position. You will work closely with Nokia's Wireless Data Development Group as well as interfacing with Nokia's development partners to produce new innovative data solutions for our wireless markets. You will take ownership of the lab and all of its equipment and staff. You will need a technical degree and proven experience managing systems, including planning, budgeting and systems administration. The ability to work with multiple teams and multiple projects at the same time is required. Limited travel will be part of this position.

Software Applications Engineer

You will be part of a dynamic environment where skilled engineers work at the forefront of technology to design our data offerings with visionary insight. Your application level experience with Internet/Intranet, WWW, e-mail, fax store and forward, SMS and multimedia solutions qualify you for one of these challenging positions. You need to be proficient using standard programming languages and technologies such as C/C++ and Object Oriented programming on open operating systems, like UNIX and Windows/NT. A BSCS with 3+years of direct development experience or an MSCS with 5+ years experience is required. Occasional travel working with Nokia's development partners and European based Nokia development groups is a part of this position.

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Automation/Database Specialist: Design and develop utility programs for our robotics system in our Scientific Computing Department. A degree in Biology with training or 2-3+ years' experience in programming C/C++, as well as database management and system analysis required. Informix or other RDBMS preferred. JOB CODE: SL363

UNIX Systems Administrator: Participate in new installs and system upgrades. Responsibilities include account creation and maintenance, system monitoring, daily system administration and general user support. A BA/BS in CS, Mathematics, or EE and a working knowledge of the UNIX operating system required. Must have the ability to communicate with both technical and non-technical users. JOB CODE: SL674

Sr. Systems Analyst - Clinical Systems: Lead the specification, design, development, implementation and support of database systems and applications for the clinical development process. Must have experience with work flow management, planning, and managing systems integration and development projects. Experience with imaging, statistical analysis, document management, and object-oriented programming. A BSCS and 5+ years' commercial experience with database systems design, development and implementation in support of the UNIX environment are required. Informix or Oracle experience necessary. JOB CODE: JOWL1

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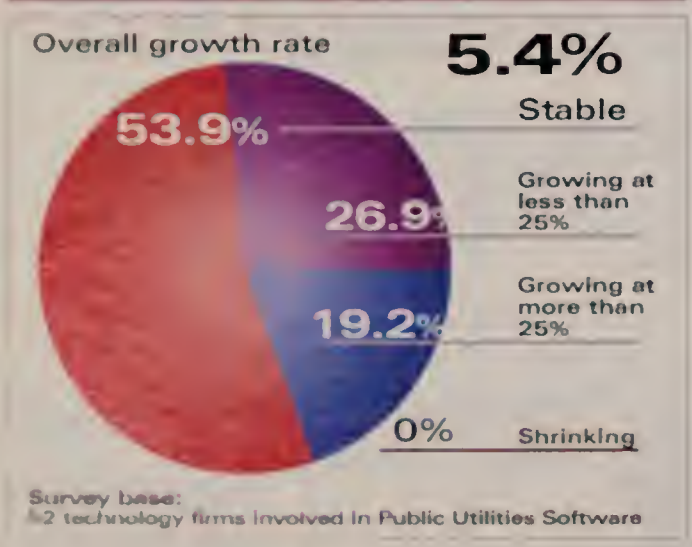
Career Survey: Public Utilities Software

Industry Hiring Trends



Survey base:
[illegible]2 technology firms involved in Public Utilities Software

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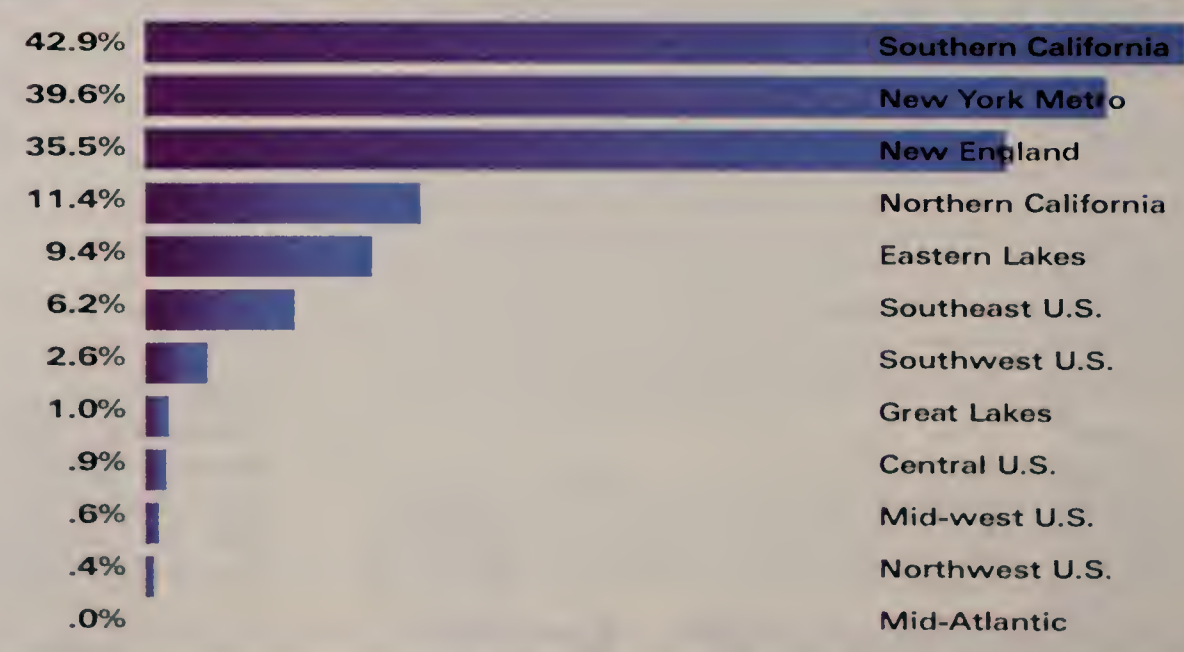
Regional Growth Analysis



[illegible], a directory publisher in Woburn, Mass., tracks the U.S. 35,000 technology manufacturers. [illegible] survey [illegible] to the 29,383 tracked firms with fewer than 1,000 employees.

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Regional Scope: The Southwest

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As manufacturing and service industries expand their operations in the region, the need for people to run their information systems is growing as well.

Las Vegas

It seems a safe bet that skilled IS professionals should have no trouble finding work in Las Vegas.

As one of the fastest-growing cities in the country, the town best known for its tourism and gaming industries is experiencing the same shortfall of IS talent prevalent in other growth centers.

"Las Vegas is a small town that has grown up overnight. While there is a flow of IS pros coming into town, I think that at a technical and developmental level, a lot of companies are challenged in finding the right individuals," says Lynn Gerard, Las Vegas branch manager at IS recruiter Robert Half International.

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Despite the city's image as a haven for transients, Gerard says, "once in place, [IS workers] tend to have longevity in their positions."

As for specific skills, "other than the casinos, [needs] are in network systems. Most of the casinos are running AS/400s," Gerard says. Specific skills in high demand right now include Turbo Pascal, FoxPro, C++ and Windows NT, she says.

Regarding pay, Gerard says, "We find that Las Vegas is slightly lower compared to other cities, but not outrageously so." Fortunately, the relatively low cost of living can help make up for any disparities.

Of more concern to IS professionals accustomed to casual business environments might be the gaming industry's close surveillance of customers and employees. Virtually all transactions — from each pull on a slot machine lever to every hand of blackjack — are carefully observed, and the watchers themselves are watched. Casinos are top-down, rigid hierarchies and close kin to banks and other financial institutions.

"Anytime there's as much money involved as there is in this town, there's a lot of pressure," says Laurel A. Bailey, Las Vegas-based director of customer support at Hilton Hotels Corp., which has several large properties in the city. "Everything is about tracking: Who's got the money? Where is it going? Who's winning? Who's losing? Do they get a free room or a free suite?"

Because most of that tracking is done by database, IS people are key to its smooth functioning. And because most of the action takes place at night, Bailey says, "this is not a particularly 9-to-5 town. There are a lot of round-the-clock operations: 24 hours a day, seven days a week, 365 days a year. And you just can't have the system down at a hotel."

Phoenix

About the only thing hotter than the legendary summer weather in Phoenix and the Valley of the Sun is the IS job market.

"I'm getting pounded on," says Clay Schroeder, vice president and general manager at recruiter Arrowhead Resource Solutions, Inc. "I have maybe 20 possible positions for every qualified individual. If you are a programmer/programmer analyst with anywhere above two years' experience in C++ or Unix, within two weeks you could have a good-paying job out here."

The market is also good for those with C and Windows NT experience, he says. But "the real surprise in the Phoenix area is the resurgence of the old dinosaurs," Schroeder says. "If I could find a good Cobol person, I could place them in a heartbeat." Albuquerque, N.M., and Tucson, Ariz., the region's other major markets, are similar stories.

Industries that are in particular need, Schroeder says, include financial services, health care, high-tech manufacturing and "a lot of start-up entrepreneurial operations."

Ruth Woody, a vice president at ASA Solutions, Inc., sees much the same thing. "I have more business than I have had in eight years, with over 200 [current] requirements."

Woody is looking for "skills within client/server, data warehousing and intranets. C and C++ is in real high demand, and there is more and more need for PowerBuilder and Visual Basic."

She also stresses a growing — though possibly only temporary — need for mainframers. "In the next 18 months, there is going to be real demand for old Cobol programmers who now may be having tough times," she says. "With the year 2000 coming, companies have got to re-engineer their systems to accept the new dates." ■

Spain is a freelance writer in Chicago.

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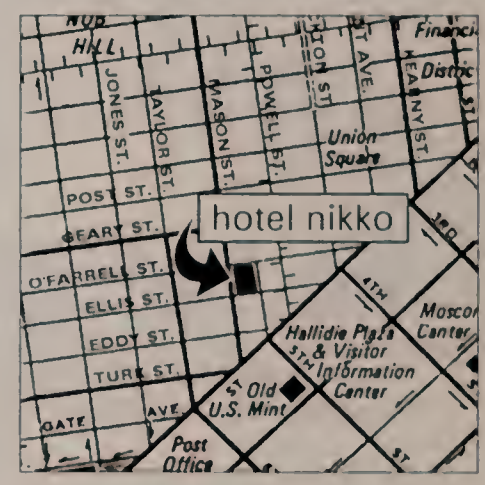

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	Proactive Recruitment Techniques Dave Drugman, President, Bay Cities Research, Inc.
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Marketplace

How To Choose a Monitor

A good PC monitor can mean the difference between a happy user and a grouchy one

By ROSEMARY CAFASSO

Despite the importance of monitors, some buyers treat them as if they were an add-on device and spend no more time selecting one than they would a mouse pad or a wrist rest.

Industry analysts say many buyers could do a better job evaluating monitors. The bottom line: A good monitor doesn't mean a top-of-the-line monitor. It means a monitor that matches a user's work environment.

To find the right monitor, analysts recommend that buyers first identify their users' needs, then factor in cost concerns.

If you are working with a very tight budget, the size of a monitor plays a bigger role in your buying decision. For example, you may choose a 14-in. monitor instead of a 15-in. unit for a user who doesn't run high-end graphics. The cost difference would be about $100 per monitor, which adds up when you are buying for an entire department.

Here are some analysts' guidelines to help determine user needs:

▶ **A typical office worker** who handles light spreadsheet and word processing duties should have a 15-in. monitor. But these users could get by with a good-quality 14-in. unit. A 14-in. unit costs $280, while an average 15-in. monitor will sell for $420, according to Stanford Resources, Inc. in San Jose, Calif.

▶ **A power user** who puts more demands on the system with database tools, high-powered spreadsheets and graphics will be best served by a 17-in. monitor. The average price, according to Stanford Resources, is $830. But if budgets are tight, go with a 15-in. unit and save at least $300 per device.

▶ **A high-end user** such as a software developer requires a 20- or 21-in. device. The average cost is between $1,700 and $2,000, Stanford Resources reports.

Bigger usually better

Analysts say buyers frequently go for the lowest-priced units within each category — which can be a big mistake, they say.

"Generally, bigger is better," says Matthew Red, peripheral products analyst at Associated Research Services, Inc., a Dallas-based firm that focuses on the PC hardware market.

"However, there are lots of 17-in. monitors out there that won't give you a quality picture. You would be better off buying a high-quality 15-in. than a cheap 17-in.," he says.

A quality monitor is one that produces the best image in its size category.

That is determined by such factors as resolution, dot pitch and pixel formats.

Buyers will probably get hit with a litany of this monitor jargon when shopping for units, but analysts say there are really only a few key functions or technologies that are essential when buying a monitor.

"There are three things: dot pitch, refresh rate and size," says Lee Schugar, an analyst at Data-quest in San Jose. Dot pitch refers to the space between the dots on the screen. The larger the space, the lower the quality of the screen image.

Currently, the common range of dot pitch is from .25 to .31mm, Schugar notes. "The smaller the number, the better the picture, and that will factor into the price," he says.

Second, look for a fast refresh rate, which tells you how frequently the image on the screen is redrawn.

Slower rates will produce a flickering image, while faster rates will recast the image with little notice to the eye. A good rate would be at least 60 refreshes per second.

Monitor resolution also is important and increases as you increase monitor size. The high-end monitors should have resolutions up to at least 1280-by-1024.

But be careful. Some analysts warn that a monitor may offer high resolution but a poor refresh rate. The resolution figure may sound great, but the overall quality of the system may suffer.

Another feature to look for is flat square tube monitor construction. With this technology, the monitor's screen is flatter and therefore presents a higher-quality image that is easy on the eyes.

"When it comes to monitors, you get what you pay for," Schugar says. "The mistake is when people purchase a monitor without a lot of knowledge and get caught up in point-of-sale tactics. A little planning will help you go a long way." ■

Cafasso is *Computerworld*'s senior editor, Finance & Investing.

U.S. monitor shipments Q2 1996

14-inch:	1.7M units
15-inch:	1.9M units
17-inch:	1.1M units
20-inch:	75,000 units
21-inch:	69,000 units

Source: Stanford Resources, Inc., San Jose, Calif.

Three things to look for when choosing a monitor:

1. High resolution
2. Fast refresh rate
3. Low dot pitch

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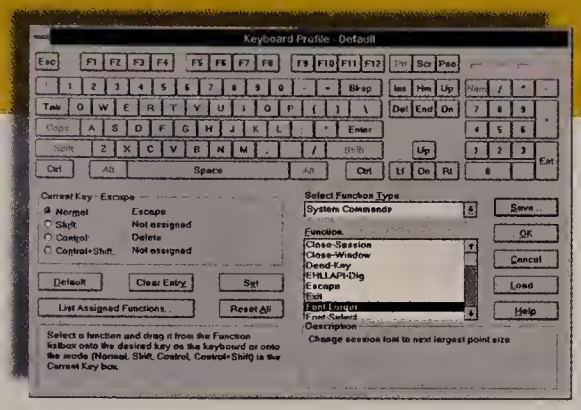

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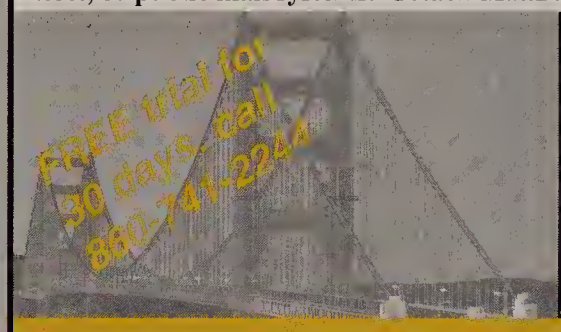

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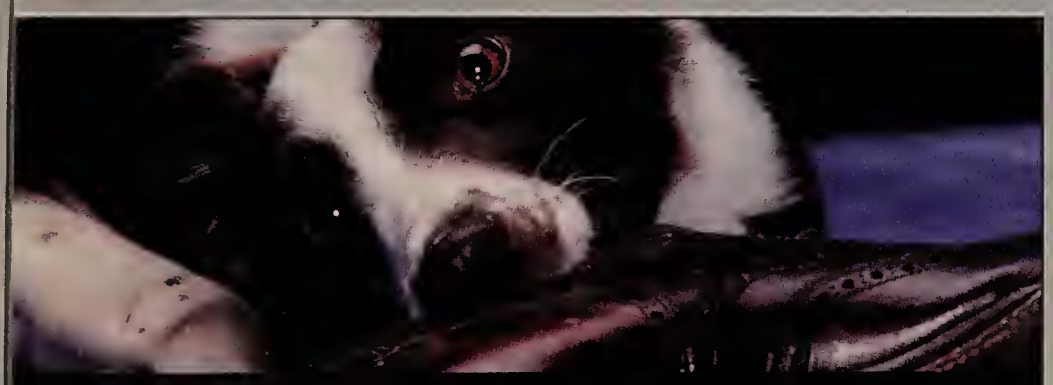

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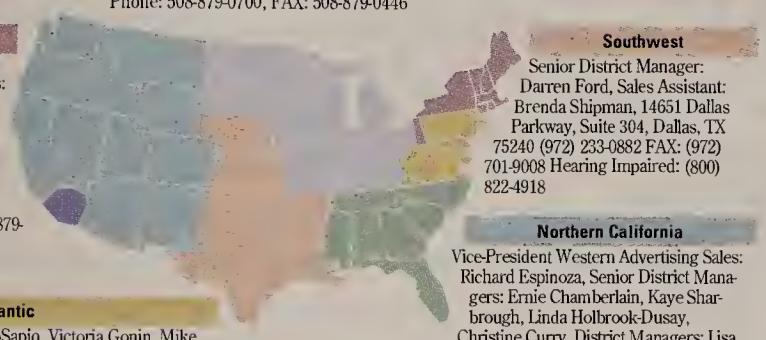

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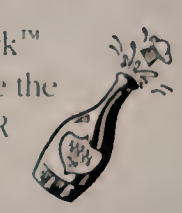

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Interleaf hits dark times, **131**

Finance & Investing

Next week: Investors unite online

It's strictly personal

IS executives chart a variety of financial management strategies

When it comes to investment strategy, information systems executives are no different from the rest of us. Their investment tactics reflect their personal style and attitudes about money management.

While many IS executives say they favor high-technology stocks, they don't restrict themselves to this arena. As with any group, some IS chiefs are high rollers, while others work hard to avoid any risk. As Larry Loh, chief information officer at Analog Devices, Inc. in Norwood, Mass., says, "The level of risk is something you have to feel personally comfortable with."

Perhaps the one thing all IS executives share is a shortage of time to manage investments. To solve that problem, some rely on financial planners and brokers, while others handle their own portfolio and try to save time by using online resources and tools.

Here's a look at how some IS executives take on the investment challenge.

Joyce Young

Director of information technology and services, Tellabs, Inc. in Lisle, Ill.

We are all products of our environment. My parents were entrepreneurial types who never saved much. I always felt worried about things, so I am a conservative investor. I save a lot. My son is only seven, and he has a pretty much paid-up college fund.

I look a lot at technology stocks. I hear about more tips in that area, just because of the world we are in. We have a varied portfolio, with a pretty heavy investment in stocks, through stocks we own [directly] or through mutual funds.

I have loosened up a bit. My one rule is [buying stocks] is not the first thing I do with my money. I use the part that wouldn't hurt me if I threw it away.

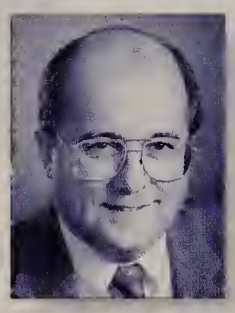
I used to spend a lot more time on this than I do now. I have a broker and an accountant. I trust them. I have to rely on them for their help.

You should absolutely do 401(k)s to the max. That's hard for some people, but I go for the max. It is important to know your company's financial situation. Stay ahead of the curve there.

Tellabs gave options this year. This is becoming a more frequent thing that companies are doing. Become familiar with it so you take [options] to the max. This is the kind of stuff you could retire on.

Bard White

CIO and worldwide director of IS, Spalding Sports Worldwide in Chicopee, Mass.



I do play the stock market — but through a 401(k) — and I try to keep my investments in high-risk, big-return stocks. I check it every three or four days and watch the market to know if I have to move [my money] to a safe haven.

This strategy has been gaining me about 25% a year for the last four years. I am not looking to retire in the next 10 years, [so] if I watch it closely enough, there really isn't undue risk. If you can keep up with it and research it, then you can afford to be out there. I spend roughly an hour or two a week on it altogether.

You want to ride through [market changes] and not react too quickly. You don't want to get nervous. This is my retirement fund. This is not something to let go. You have to be careful, and this isn't for the faint of heart. But this isn't as volatile as going out and choosing individual stocks.

If I hear about a high-tech stock that I don't know about, I will go online [to sites such as] www.industry.net. Even if you just go through Yahoo with the company name, you will get all sorts of information.

Kevin Reilly

Vice president and CIO, Richardson Electronics, Inc. in LaFox, Ill.

I am just finishing an MBA, so I at least understand the mechanics of how [the stock market] works. Most IS folks don't really understand what it is all about. I know understanding the market made me feel more confident.

I am not looking to get rich this afternoon. I am looking to make sure my family and I are comfortable. I am 43. With luck, I have a while to work at this. I am not all in safe investments. I am not fooling around with bonds. I am more interested in stocks. I've tried to use the information [learned] in class on how to analyze a company, and I try to find good companies.

I am not interested in trying to time the market, buying in and selling high. I look for companies that are good long terms, mostly blue-chip types.

Tom Loane

CIO, Alamo Rent A Car, Inc. in Fort Lauderdale, Fla.

I have an investment adviser, and I tell him what my tolerance for risk is at the moment. I tell him certain things I am not comfortable doing. I am not excited doing commodities futures. I like longer-term values.

You have to figure out what you want to accomplish and then determine if you have the style to do it yourself. And if you don't, don't.

Just because you are good at what you do as an IS director doesn't mean you are automatically qualified to pick high-tech stocks.

Herb Drucker

Chief information technology officer, American Red Cross in Falls Church, Va.

I am not a player in the stock market. About 10 years ago, I had a lot of stock and I didn't do well. They were computer stocks; they went down a lot. My wife is completely different. She has taken charge of our retirement funds, and she says I should take more chances. From a personal perspective, we are working with mutual funds. That's where my money is.

You need to read as much as you can, go on the Internet, consult with a person who really understands the day in, day out of trading. Most people don't have the guts — I know I don't — of looking at it every day and trading.

BY ROSEMARY CAFASSO

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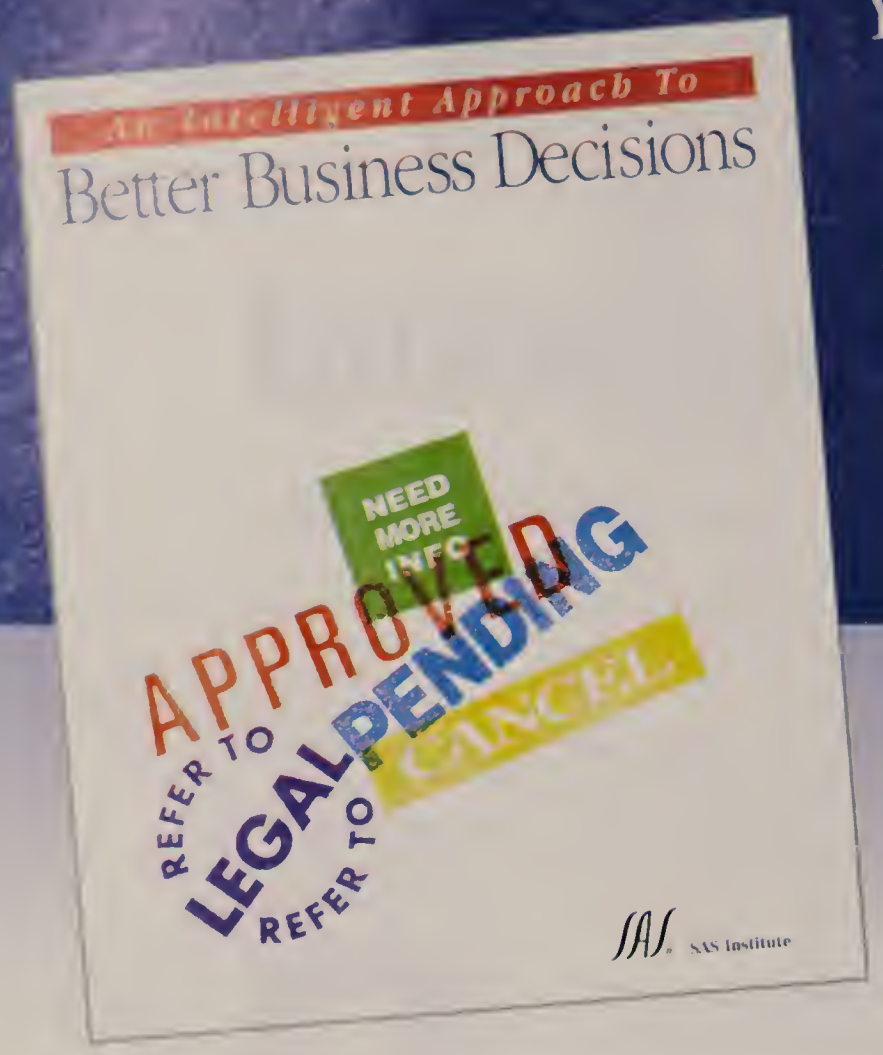

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The Week in Stocks

Gainers

PERCENT

Open Market Inc.	31.5
Hummingbird Comm. Ltd.	22.6
Applix Inc.	21.9
Komag Inc.	21.3
Network Computing Devices	19.1
Racotek Inc.	18.6
Intergraph Corp.	15.7
Wang Laboratories Inc.	15.7

DOLLAR

Dell Computer Corp.	8.31
CompUSA Inc.(H)	6.75
Applix Inc.	6.13
Hummingbird Comm. Ltd.	6.13
Komag Inc.	4.75
Peoplesoft(H)	4.50
Open Market Inc.	4.38
Intel Corp.(H)	4.38

Losers

PERCENT

Peak Technology Group(L)	-44.4
Wall Data Inc.	-38.5
DSC Communications(L)	-38.4
Truevision Corp.(L)	-36.4
Interleaf Inc.(L)	-32.1
ViewLogic Systems(L)	-25.5
CrossComm(L)	-21.3
Software Publishing Corp.	-18.8

DOLLAR

DSC Communications(L)	-10.13
Peak Technology Group(L)	-10.00
Wall Data Inc.	-8.75
Netscape Comm. Corp.	-7.00
America On-Line	-5.00
Hewlett Packard Co.(H)	-4.63
Systemsoft Corp.	-4.50
Arbor Software	-3.75

Industry Almanac

Dark time for Interleaf

Interleaf, Inc. (Nasdaq:LEAF) announced last week that it will show a "significant loss" for its fiscal quarter ended Sept. 30. In response, Wall Street dropped the already rock-bottom stock another 33%, to $2.38.

Those bad tidings were just the latest for the Waltham, Mass., document management software developer. Interleaf also announced last week that it is talking to Hambrecht & Quist, Inc. about assistance in further debt or equity financing. And it is negotiating for financing to pay for ongoing operations. It closed several corporate sales and support offices in August and cut 10% of its workforce. Does it have a future?

Many analysts don't see much light at the end of the tunnel. But at least one says brighter times may be ahead.

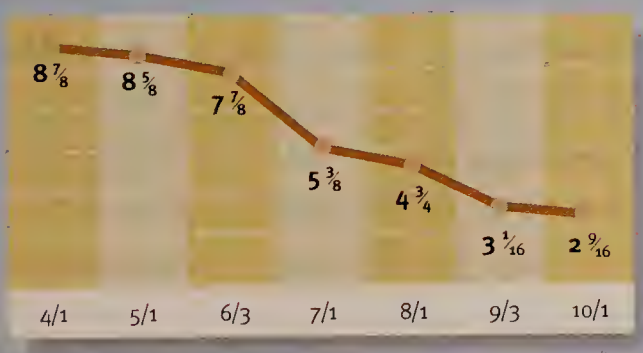
"Interleaf has a solid product line," says Steve Shepich, an analyst at Olde Discount Corp. in Detroit. "[Its] problem has been getting the word out to prospective customers." Shepich says if Interleaf can squeeze through the next quarter or two, its long-term prospects look good.

The company does have good news. The latest version of its flagship product authoring and publishing tool, Interleaf 6, has received solid reviews. Interleaf has kept current, rolling out Intellect/BusinessWeb earlier this year. Interleaf has also released products for Standard Generalized Markup Language publishing, an alternative to Hypertext Markup Language.

But analysts such as Shepich are in the minority. More appear to share the opinion of Alexander Henderson, an analyst at Prudential Securities Research in New York. "[Interleaf] has really struggled, trying different approaches," he says. "They got stuck in quicksand, and the more they've struggled, the deeper in trouble they got." — *Stewart Deck*

A leaf falls

Interleaf's stock slid on financial woes



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AIT	66.88	49.63	AMERITECH Corp.	55.00	2.75	5.3
T	68.88	37.50	AT & T	39.38	0.84	2.2
ASND	71.25	16.50	Ascend Communications	66.38	-0.38	-0.6
8NYN	13.63	4.63	8anyan Systems Inc.	4.63	-0.88	-15.9
8AY	50.00	20.25	8ay Networks Inc.	26.13	-2.13	-7.5
8EL	80.38	43.50	8ell Atlantic Corp.	62.00	2.75	4.6
8LS	45.88	35.25	Bellsouth Corp.	39.00	2.75	7.6
8RKT	38.00	6.88	Brooktrout Technology (H)	37.25	1.00	2.8
CS	87.75	53.00	Cabletron Systems	69.50	0.25	0.4
CSCC	84.63	14.00	Cascade Communications (H)	84.63	2.88	3.5
CGRM	25.13	12.25	Centigram Communications	15.00	-0.50	-3.2
CSCO	65.75	30.50	Cisco Systems Inc. (H)	65.75	2.50	4.0
CLIX	9.25	4.50	Compression Labs Inc.	6.56	-0.44	-6.3
CMNT	10.50	4.00	Computer Network Tech.	6.25	0.50	8.7
XCOM	14.25	6.00	CrossComm (L)	6.00	-1.63	-21.3
DIGI	60.13	16.25	DSC Communications (L)	16.25	-10.13	-38.4
FORE	44.75	15.38	FORE Systems Inc.	39.50	-1.88	-4.5
GDC	21.88	9.13	General Datacomm Inds.	11.63	0.25	2.2
GSX	44.25	28.00	General Signal Networks (H)	42.88	0.38	0.9
GTE	49.25	37.75	GTE Corp.	40.75	2.63	6.9
LU	45.88	29.75	Lucent Tech. (H)	43.25	-0.38	-0.9
MADGF	48.63	9.13	Madge Networks NV	10.75	-1.63	-13.1
MCIC	31.13	22.38	MCI Commmunications Corp.	26.00	1.25	5.1
MNPI	34.50	5.50	Microcom Inc.	8.38	-0.31	-3.6
NETM	34.00	7.63	NetManage Inc.	8.25	-1.13	-12.0
NTRX	10.88	3.63	Netrix Corp.	7.63	-0.13	-1.6
NCDI	10.25	2.88	Network Computing Devices	7.00	1.13	19.1
NWK	41.38	11.13	Network Equipment Tech.	13.00	-0.75	-5.5
NETG	27.63	15.00	Network General	23.63	0.00	0.0
NN	74.25	25.00	Newbridge Networks Corp.	66.00	-0.50	-0.8
NT	58.88	31.50	Northern Telecom Ltd.	58.88	0.75	1.3
NOVL	19.13	10.00	Novell Inc.	11.31	-0.06	-0.5
NYN	59.25	42.00	Nynex Corp.	45.63	2.38	5.5
OCTL	31.50	12.63	Octel Communications Corp.	30.25	0.75	2.5
ODSI	39.75	15.50	Optical Data Systems Inc. (L)	15.63	-1.25	-7.4
PAC	35.25	25.88	Pacific Telesis	34.88	1.88	5.7
PCTL	44.72	20.75	Picturetel Corp.	33.63	-1.88	-5.3
PTON	9.63	2.38	Proteon Inc.	2.88	-0.38	-11.5
RACO	7.00	3.50	Racotek Inc.	6.38	1.00	18.6
RETX	10.88	1.81	Retix	7.38	-0.75	-9.2
SBC	60.25	46.00	SBC Communications	49.75	2.50	5.3
SFA	20.38	11.38	Scientific Atlanta Inc.	17.38	1.63	10.3
SHVA	87.25	21.13	Shiva Corp.	56.75	-2.25	-3.8
FON	45.50	29.25	Sprint Corp.	39.13	0.25	0.6
SMSC	23.50	10.25	Standard Microsystems Corp.	14.06	-0.13	-0.9
TBIT	13.88	2.38	Telebit Corp.	13.13	0.00	0.0
USRX	105.50	32.75	US Robotics	73.00	0.50	0.7
USW	48.38	27.25	U S West Inc.	31.38	1.88	6.4
XIRC	17.50	8.88	Xircom	17.06	0.44	2.6
XYLN	76.00	34.00	Xylan Corp.	58.00	0.50	0.9
PCs and Workstations						**UP 1.87%**
AALR	10.38	5.88	Advanced Logic Research	8.50	-0.13	-1.4
AAPL	42.50	16.00	Apple Computer Inc.	22.75	0.50	2.2
ASTA	10.38	4.00	AST Research Inc.	5.00	0.13	2.6
CPQ	66.38	35.88	Compaq Computer Corp.	65.88	2.13	3.3
DELL	87.50	23.00	Dell Computer Corp.	84.06	8.31	11.0
GATE	50.13	18.00	Gateway 2000 Inc.	47.88	0.00	0.0
HWP	91.00	36.88	Hewlett Packard Co. (H)	42.88	-4.63	-9.7
MUEI	24.13	8.75	Micron International Inc.	21.63	2.75	14.6
NIPNY	70.75	49.88	NEC America	56.00	-2.25	-3.9
SGI	38.75	20.00	Silicon Graphics	21.75	0.25	1.2
SUNW	67.13	26.38	Sun Microsystems Inc.	64.25	0.50	0.8
Large Systems						**OFF 0.96%**
AMH	13.50	6.75	Amdahl Corp.	8.81	-0.69	-7.2
DGN	19.13	8.88	Data General Corp.	13.50	-0.50	-3.6
DEC	76.50	30.50	Digital Equipment Corp.	34.25	-2.25	-6.2
I8M	128.88	83.13	IBM	126.75	1.75	1.4
MDCD	20.25	6.50	Meridian Data Inc.	6.88	-0.50	-6.8
NETF	7.00	2.63	NetFrame	2.75	-0.06	-2.2
SQNT	20.13	10.13	Sequent Computer Sys.	12.63	-0.13	-1.0
SEQS	7.75	1.88	Sequoia Systems Inc.	2.50	-0.19	-7.0
SRA	36.13	16.63	Stratus Computer Inc.	22.88	2.75	13.7
TDM	15.25	8.38	Tandem Computers Inc.	11.50	0.00	0.0
UIS	9.13	5.38	Unisys Corp.	6.50	0.50	8.3
Software						**OFF 1.70%**
ADBE	74.25	28.50	Adobe Systems Inc.	34.50	-3.25	-8.6
AMSWA	8.75	3.63	American Software Inc.	6.75	0.63	10.2
APLX	42.50	8.25	Applix Inc.	34.13	6.13	21.9
ARSW	82.75	28.75	Arbor Software	38.50	-3.75	-8.9
ADSK	44.25	18.50	Autodesk Inc.	24.50	-2.00	-7.5
BGSS	50.00	29.75	8GS Systems Inc.	43.50	-1.75	-3.9
BMCS	86.75	32.50	BMC Software Inc. (H)	84.75	2.38	2.9
BOOL	26.75	19.38	Boole and Babbage	25.00	-0.25	-1.0
BORL	21.25	6.06	Borland Int'l Inc.	6.38	-0.50	-7.3
8OBJY	55.50	11.75	Business Objects	17.50	-1.25	-6.7
CAYN	11.88	4.00	Cayenne Software Inc.	4.19	0.00	0.0
CYE	27.88	14.13	Cheyenne Software Inc.	22.13	0.38	1.7
COGNF	33.50	9.75	Cognos Inc. (H)	32.13	1.06	3.4
CA	63.63	24.88	Computer Associates (H)	61.13	1.13	1.9
CVN	15.50	5.75	Computervision Corp.	8.25	-0.63	-7.0
CPWR	46.50	15.50	Compuware Corp.	46.13	2.38	5.4
CSRE	32.00	10.75	Comshare Inc.	14.63	-0.88	-5.6
COSFF	19.13	8.19	Corel Corp. (L)	8.25	-0.69	-7.7
DWTI	13.00	3.25	Dataware Technologies Inc.	3.75	0.00	0.0
FILE	67.00	20.00	Filenet Corp.	26.00	2.00	8.3
FRTE	81.75	24.75	Forte Software	37.75	2.13	6.0
FTPS	40.63	5.88	FTP Software Inc.	7.13	-0.75	-9.5
GPTA	9.06	3.00	Gupta	4.38	-0.25	-5.4
HUMCF	60.50	23.00	Hummingbird Comm. Ltd.	33.25	6.13	22.6
HYSW	28.25	9.75	Hyperion Software Corp.	14.63	-0.75	-4.9
IRIC	16.25	10.00	Information Resources	12.50	-0.75	-5.7
IFMX	36.75	16.88	Informix Corp.	29.00	-0.13	-0.4
INGR	20.13	8.63	Intergraph Corp.	12.44	1.69	15.7
LEAF	12.63	2.00	Interleaf Inc. (L)	2.38	-1.13	-32.1
ISLI	22.00	7.50	Intersolv Inc.	8.25	-1.00	-10.8
INTU	89.25	27.25	Intuit Inc.	31.00	-2.00	-6.1
LGWX	22.25	7.50	Logic Works	8.38	0.38	4.7
MAPS	23.25	7.50	MapInfo Corp.	11.00	0.88	8.6
MATH	9.25	4.50	MathSoft (L)	4.75	-0.50	-9.5
MCAF	74.00	17.63	McAfee Associates	74.00	3.75	5.3
MENT	22.88	8.88	Mentor Graphics (L)	9.19	-0.25	-2.6
MIFGY	21.25	8.25	Micro Focus	12.25	-0.25	-2.0
MGXI	18.63	5.63	Micrografx Inc. (L)	6.13	0.19	3.2
MSFT	138.63	79.88	Microsoft Corp.	136.38	2.25	1.7
ORCL	45.00	23.38	Oracle Corp.	45.00	2.00	4.7
PMTC	52.38	25.88	Parametric Technology	51.38	0.75	1.5
PARQ	14.63	3.63	ParcPlace Systems Inc.	4.00	0.25	6.7
PSFT	85.75	34.25	Peoplesoft (H)	85.50	4.50	5.6
PTEC	20.38	9.88	Phoenix Technologies	17.63	0.25	1.4
PSQL	12.75	3.13	Platinum Software	10.75	-0.25	-2.3
PLAT	20.75	9.25	Platinum Technology	12.88	0.50	4.0
PRGS	38.00	12.13	Progress Software Corp.	15.75	0.50	3.3
RNBO	25.50	14.63	Rainbow Technologies Inc.	17.63	0.50	2.9
REDB	61.00	18.25	Red Brick Systems Inc.	24.25	0.50	2.1
SAPE	58.25	29.25	Sapient Corp.	45.75	0.00	0.0
SCOC	9.13	5.50	SCO Inc.	6.63	-0.25	-3.6
SDTI	109.00	22.88	Security Dynamics Tech.	69.75	-1.25	-1.8
SKEY	45.63	13.38	Softkey International Inc.	20.88	1.25	6.4
SPCO	4.25	1.19	Software Publishing Corp.	1.63	-0.38	-18.8
SQAX	39.75	16.00	SQA Inc.	24.50	-0.50	-2.0
SOTA	19.75	9.00	State of the Art	12.06	0.75	6.6
SSW	81.38	40.00	Sterling Software Inc.	76.88	0.50	0.7
SDRC	37.38	15.00	Struct. Dynamics Research	22.38	-1.75	-7.3
SY8S	39.75	14.00	Sybase Inc. (L)	14.81	0.31	2.2
SYMC	30.38	8.75	Symantec Corp.	10.75	-0.44	-3.9
SNPS	50.50	23.00	SynOpsys	47.25	1.25	2.7
SSAX	28.38	8.25	System Software Assoc.	11.75	-0.88	-6.9
SYSF	36.50	4.38	Systemsoft Corp.	29.25	-4.50	-13.3
TRUV	9.63	3.50	Truevision Corp. (L)	3.50	-2.00	-36.4
VIEW	17.50	8.75	ViewLogic Systems (L)	8.75	-3.00	-25.5
VMRK	15.13	5.75	VMark Software Inc.	6.50	-0.63	-8.8
WALK	13.25	6.25	Walker Interactive Systems	13.25	1.75	15.2
WALL	27.50	13.00	Wall Data Inc.	14.00	-8.75	-38.5
WANG	26.13	14.75	Wang Laboratories Inc.	22.13	3.00	15.7
Internet						**OFF 1.51%**
AOL	71.00	24.50	America On-Line	29.50	-5.00	-14.5
88N	48.75	15.63	BBN Corp.	18.25	0.63	3.5
CSRV	35.50	10.75	Compuserve Corp.	12.75	-1.50	-10.5
EDFY	55.75	16.25	Edify Corp.	19.13	-0.88	-4.4
LCOS	29.25	5.75	Lycos Inc.	11.25	-0.75	-6.3
NETC	91.50	15.50	Netcom On-Line	16.75	-0.75	-4.3
NSCP	87.00	28.00	Netscape Comm. Corp.	42.75	-7.00	-14.1
OMKT	42.25	11.50	Open Market Inc.	18.25	4.38	31.5
PSIX	29.00	6.75	PSINet	11.00	-0.75	-6.4
QDEK	39.50	5.63	Quarterdeck Corp.	6.63	-0.50	-7.0
RAPT	39.25	12.75	Raptor Systems	19.00	1.25	7.0
SCUR	64.50	9.50	Secure Computing Corp. (L)	11.69	0.69	6.3
SPYG	61.00	12.00	Spyglass Inc.	18.50	-0.75	-3.9
YHOO	43.00	15.50	Yahoo! Inc.	22.13	0.38	1.7
Semiconductors						**OFF 3.50%**
AMD	29.25	10.25	Advanced Micro Devices	14.25	-0.25	-1.7
ADI	30.13	17.00	Analog Devices Inc.	26.88	-0.88	-3.2
CHPS	14.50	7.88	Chips and Technologies	14.13	0.38	2.7
CRUS	58.13	12.63	Cirrus Logic	18.88	-1.75	-8.5
CY	19.75	9.13	Cypress Semiconductor Corp.	11.88	-1.00	-7.8
CYRX	45.38	11.50	Cyrix	15.75	0.50	3.3
INTC	101.38	49.81	Intel Corp. (H)	101.38	4.38	4.5
LSI	59.25	17.00	LSI Logic Corp.	21.75	-2.13	-8.9
LSCC	42.13	19.75	Lattice Semiconductor	29.00	-0.63	-2.1
MCRL	28.00	12.00	Micrel Semiconductor Inc.	24.25	0.63	2.6
MU	80.63	16.63	Micron Technology	28.75	-2.38	-7.6
MOT	77.38	44.75	Motorola Inc.	48.25	-3.25	-6.3
NSM	28.50	13.00	National Semiconductor	19.38	-1.25	-6.1
TXN	81.25	40.50	Texas Instruments	52.25	-2.25	-4.1
VLSI	34.25	10.38	VLSI Technology	15.44	-0.81	-5.0
XLNX	49.00	23.25	Xilinx	33.06	-3.44	-9.4
ZLG	41.88	14.88	Zilog Inc.	18.88	-0.38	-1.9
Peripherals and Subsystems						**OFF 0.21%**
APCC	15.97	7.88	American Power Conversion	14.63	-0.50	-3.3
ADPT	61.50	35.00	Adaptec Inc.	59.75	2.13	3.7
C8EX	11.88	3.00	Cambex Corp.	3.56	0.06	1.8
CREAF	13.63	3.50	Creative Technology Ltd.	5.69	-0.19	-3.2
RACE	8.38	3.63	Data Race Inc.	7.88	0.25	3.3
DTM	8.88	4.13	Dataram Corp.	7.38	-0.44	-5.6
EMC	23.50	13.00	EMC Corp.	22.75	0.38	1.7
EMLX	21.38	6.38	Emulex Corp.	16.63	1.50	9.9
ESCC	29.00	16.50	Evans and Sutherland	23.75	1.25	5.6
EX8T	22.75	11.13	Exabyte	15.25	0.38	2.5
IISLF	4.13	1.50	Intelligent Info. Systems	1.75	-0.19	-9.7
IOMG	55.13	2.75	Iomega Corp.	22.13	-0.88	-3.8
IPLS	8.25	1.88	IPL Systems Inc.	2.06	-0.06	-2.9
KMAG	37.00	17.63	Komag Inc.	27.00	4.75	21.3
MTSI	22.25	11.25	Micro Touch Systems Inc.	18.25	0.38	2.1
PEAK	34.75	11.88	Peak Technology Group (L)	12.50	-10.00	-44.4
PNCL	19.75	4.88	Pinnacle Micro Inc.	6.00	0.25	4.3
AQM	6.75	3.25	QMS Inc.	6.13	0.38	6.5
QNTM	26.13	10.88	Quantum Corp.	18.06	0.69	4.0
RDUS	7.50	0.94	Radius Inc.	1.63	-0.19	-10.3
SEG	67.75	36.13	Seagate Technology	57.75	1.75	3.1
STK	44.13	21.75	Storage Technology	39.75	2.38	6.4
STLC	8.75	1.25	Streamlogic Corp.	2.06	-0.22	-9.6
TEK	61.88	29.75	Tektronix Inc.	41.25	0.75	1.9
WDC	41.75	14.38	Western Digital Corp.	41.75	1.50	3.7
XRX	58.25	39.88	Xerox Corp.	56.13	3.00	5.6
Services						**UP 2.69%**
AMSY	33.38	15.38	American Mgmt. Systems	29.25	0.63	2.2
ANLY	25.50	13.63	Analysts Int'l (H)	24.50	1.25	5.4
AUD	45.75	34.00	Auto Data Processing	44.13	0.50	1.1
BDMI	61.50	23.75	BDM International Inc.	57.50	-2.75	-4.6
CATP	37.25	13.88	Cambridge Tech. Partners	33.75	1.00	3.1
CEN	54.88	36.63	Ceridian Corp.	51.50	1.88	3.8
CDO	32.63	19.75	Comdisco Inc. (H)	32.63	3.50	12.0
CHRZ	54.00	11.63	Computer Horizons	28.50	0.00	0.0
CSC	80.75	62.50	Computer Sciences	78.25	1.63	2.1
TSK	33.00	14.63	Computer Task Group	31.38	0.25	0.8
CPU	59.38	12.88	CompUSA Inc. (H)	59.38	6.75	12.8
CDAT	27.50	10.13	Control Data Systems Inc.	24.88	2.13	9.3
EGGS	13.88	5.00	Egghead Discount Software	5.75	-0.25	-4.2
EDS	61.38	43.88	Electronic Data Systems Corp. (H)	59.75	1.38	2.4
INAC	35.88	9.13	Inacom Corp. (H)	34.38	0.44	1.3
INEL	11.50	3.50	Intelligent Electronics	9.00	0.00	0.0
KEA	48.25	18.25	Keane Inc. (H)	46.38	-0.25	-0.5
MICA	19.25	7.25	Microage Inc. (H)	18.75	0.50	2.7
PAYX	62.13	26.63	Paychex (H)	62.13	3.63	6.2
PMS	55.50	33.13	Policy Management Sys. (L)	35.13	0.25	0.7
REY	28.13	16.38	Reynolds and Reynolds (H)	28.13	2.00	7.7
SCBI	30.50	14.44	SCB Computer Tech. Inc.	20.13	0.88	4.5
SEIC	26.38	17.75	SEI Corp.	22.13	-1.13	-4.8
SMED	72.13	37.38	Shared Medical Systems	55.75	-2.13	-3.7
SSPE	30.50	17.00	Software Spectrum Inc.	28.63	-1.38	-4.6
VST	27.88	9.00	VanStar Corp.	27.88	3.75	15.5
SNDT	46.75	25.25	Sungard Data Systems	45.88	0.63	1.4

KEY: (H) = New annual high reacheo in period (L) = New annual low reached in period

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IS workers

CONTINUED FROM PAGE 1

tors since the beginning of the year.

A Big Three automaker in Michigan has been trying since March to hire a full-time senior systems management expert. Still no luck.

Over and over, information systems recruiters and hiring managers tell the same story. In the post-downsizing 1990s, no one, it seems, wants to be an employee anymore.

Carlson's CIO Rex Carter: *Roughly 25% of his staff is contractors*

Instead, IS professionals with the hottest skills — such as client/server, Internet and intranet application development — move from project to project, migrating across many companies and crisscrossing several industries.

Along the way, they earn top dollar and acquire even broader expertise, which works to drive their fees up even higher.

On average, recruiters said, companies can expect to pay a contractor about one-and-a-half times what they pay an IS employee, including base salary and benefits.

"It's an exciting time to be in the field if you don't mind change. But it also can be scary as hell if you were looking to spend 30 years at Digital," said Chris Egizi, executive vice president at The Registry, an IS placement firm in Newton, Mass.

"But it was the employers that changed the rules, not the employees," Egizi said. "It's the employers who downsized and re-engineered."

Now, the same loss of long-term job security experienced by IS professionals translates into less workforce loyalty, higher recruitment costs and millions of dollars in missed business opportunities for would-be employers.

"People see themselves as more marketable if they pick up different expertise in different industries," said Bob Lederman, a former corporate staffing director at Fidelity Investments and now director of recruitment advertising at Community Newspaper Co. in Needham, Mass.

"The loyalty factor and the security factor that was once part of the employment contract sort of fell by the wayside during the downsizing era," he said.

Paying the cost

Some companies, such as Carlson, are simply eating the higher contractor personnel costs until it can successfully recruit full-time employees.

"Our preference is to staff up to 95%, then augment 5% with contractors. But due to growth and shortages in critical skill areas, we're closer to 25% contractors," said Rex Carter, vice president of IS and chief information officer at Carlson.

Chevron Information Services Co. in San Ramon, Calif., is also hiring contractors — with hopes of converting them to employees once they are on the job.

"If you have an application that you expect to support for a long period, you want people familiar with the business systems as opposed to having to worry about turnover and tracking staff," said Lora Tabor, a human resources manager at Chevron.

"But if a person is looking to be their own boss, there's really not much you can do to drag them away from that. As a business, you can't overpay," she said.

Still other companies, such as Prudential Securities, have gone into high gear with internal training programs to home-school more of the IS talent they require. It is less expensive that way.

"I pay maybe 30% more for a Cobol or CICS consultant vs. hiring a person and training them myself," said Prudential Securities CIO Bill Anderson.

Overall, Prudential Securities offers IS employees a minimum of one week's training in other, more leading-edge technologies as well.

That is one of the incentives the company uses to attract employees, Anderson said.

"There's a bidding war now. It's called the law of supply and demand," he said.

MBAs are the hot hires in high tech. See page 79.

Preferred way of life

Larry Mynatt, a 40-year-old Lotus developer, is typical of the new breed of itinerate IS worker.

In his six years as a contractor, Mynatt has worked at many companies and picked up OS/2 and Internet skills along the way. He will begin training in Windows NT later this month. He will pay $1,800 to attend a five-day NT certification course.

Depending on whether he is working in Boston or San Francisco, Mynatt, a former musician with the Atlanta Symphony, can earn between $2,000 and $3,000 per week.

"I've found it far more advantageous to earn 40% to 50% more as a contractor and pay for my own training out of pocket," Mynatt said. The same held true for paying his own health care and disability premiums, which totaled about $2,000 annually until a few years ago. Now Mynatt is covered under his domestic partner's health insurance.

But big bucks isn't the only thing that drives IS professionals off companies' full-time salary rolls.

"I don't have to play politics, and I'm constantly being challenged with new things," said Alan Fusco, a Visual Basic expert who subcontracts through his consulting firm and through The Registry, an IS placement firm. "I would never go back," he said.

— Julia King

Microsoft introduces Exchange Server 'lite'

By Tim Ouellette

Microsoft Corp. this week will roll out Team Manager, the latest in a slew of groupware and information management products that revolve around Windows 95 and Windows NT Server.

Team Manager provides basic group task management that avoids the programming requirements of more complex groupware systems such as Notes and Microsoft's Exchange Server.

Users can benefit by gaining access out of the box to group task information that is presented with individual users in mind.

"I was really impressed that I didn't have to do anything" after opening the box, said Don Nestor, a beta tester at Software Spectrum in Atlanta.

Nestor's eight team members, who are spread thoughout offices in the Southeast, use Exchange to E-mail task information. Nestor can visually track this from one spot.

Ronni Marshak, an analyst at Patricia Seybold Group in Boston, said, "Microsoft has failed by trying to mimic the group philosophy" of products such as Notes.

"Now they seem to be approaching groupware from the point of view of the individual. This is a better approach for them," Marshak said.

Though Team Manager offers this basic group task management information, users must first get a handle on exactly which offering to pick from the many workgroup options offered by Microsoft (see chart).

And the estimated 750,000 users who have already installed Exchange, Microsoft's much-touted electronic-mail and groupware server, may wonder where to go from here.

The number of options can give users more choices about how to access E-mail and task information, but it could lead to an information systems management and support headache.

Microsoft is planning another workgroup product, Outlook, which acts as a robust E-mail and groupware client upgrade to Exchange [CW, Sept. 23]. Some Exchange users at last month's Exchange conference voiced concern with integrating Outlook into their Exchange installations.

But now Outlook can act as the front end to Team Manager, too, Microsoft officials said.

Integration among the Windows-based products is the key. Team Manager can use E-mail systems such as Exchange as the backbone of its task-sharing features. And observers said users could get more out of Team Manager with the Outlook client rather than the relatively basic, first-attempt Team Manager client.

Team Manager will cost $109 when it ships by year's end. Users get a team member license to read others' information and edit their own data or a team manager license to access and edit the team data file.

Teamwork

Microsoft offers the following products to help users work together over a network:

Product	Ship Date	Feature
Exchange	April 1996	E-mail client and server with groupware features
Schedule+ 7.0	April 1996	Group scheduler integrated with Exchange
Outlook	December 1996	Desktop information management and E-mail client
Team Manager	December 1996	Group task management

Periodical postage paid at Framingham, Mass., and additional mailing offices. Posted under Canadian International Publication agreement #0385697. Computerworld (ISSN 0010-4841) is published weekly; except a single combined issue for the last week in December and the first week in January by Computerworld, Inc., 500 Old Connecticut Path, Box 9171, Framingham, Mass. 01701-9171. Copyright 1996 by Computerworld, Inc. All rights reserved. Computerworld can be purchased on microfilm and microfiche through University Microfilms Inc., 300 N. Zeeb Road, Ann Arbor, Mich. 48106. Computerworld is indexed. Back issues, if available, may be purchased through the circulation department. Photocopy rights: permission to photocopy for internal or personal use is granted by Computerworld, Inc. for libraries and other users registered with the Copyright Clearance Center (CCC), provided that the base fee of $3.00 per copy of the article, plus $.50 per page is paid directly to Copyright Clearance Center, 27 Congress Street, Salem, MA 01970. Reprints (minimum 500 copies) and permission to reprint may be purchased from Sharon Bryant, Computerworld, Inc., 500 Old Connecticut Path, Box 9171, Framingham, Mass. 01701-9171. Requests for missing issues will be honored only if received within 60 days of issue date. Subscription rates: $3.00 a copy; U.S. — $48 a year; Canada — $110 a year; Central & So. America — $150 (surface) a year; Europe — $295 a year; all other countries — $295 a year. Subscriptions call toll free (800) 669-1002. POSTMASTER: Send Form 3579 (Change of Address) to Computerworld, P.O. Box 2044, Marion, OH 43305.

What kind of people would try to run their business with client/server/web applications?

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David Coursey

Texas? Canada? Corel puts accent on Java

Were he not an English-bred Canadian, Mike Cowpland would have made a great Texas millionaire.

The president and CEO of Corel is independent and tough. He's willing to take big risks. He's conservative in business yet flamboyant in life. What good is money if you can't have fun with it? asks the man with the $14 million home and the zillion-dollar sports cars.

Cowpland plays tennis at Wimbledon and is world-class in his age group. He throws multimillion-dollar galas to show off the work customers create in CorelDraw. He's also got what every Texas millionaire absolutely must have: an accent, although it's more London than Lubbock.

This is the man who's giving Bill Gates indigestion. Which means Bill is giving Steve Ballmer indigestion, and so on down the Redmond chain of command until you've got a whole lot of churning going on.

Corel started in PostScript software, moved into graphics with CorelDraw, was a pioneer in releasing software on CD-ROM, has had mixed results in consumer and medical software, designed its own videoconferencing products, bought WordPerfect from Novell and is about to release a WordPerfect suite built in Java. All this from a Canadian company with annual revenue of about $250 million and a less-than-spectacular stock performance.

Now Cowpland is meeting Microsoft head-on, challenging the pricing of Microsoft Office at every turn — making inroads in the retail market and daring IS managers to ignore unlimited-use WordPerfect licenses that cost as little as $800 per server.

Enquiring minds want to know: Is Cowpland crazy? Can he make money doing this?

No and yes. Cowpland is a master of market share and advertising. He realizes that if WordPerfect, which was long the top word processing program before it got caught in the Microsoft Word wringer, can again achieve critical mass, it will last several more years. Because he purchased the WordPerfect code for pocket change from Novell and has unbundled support, Cowpland will make money on every server he sells — especially if servers beget single copies on notebooks and at users' homes. And it doesn't take all that much money to bootstrap Corel to its next challenge: becoming the No. 1 vendor of mainstream Java productivity applications.

Later this month, you'll be able to download a beta of the Java-based WordPerfect suite, complete with word processing, spreadsheet and charting applications. Just the thing for IS departments that are looking into using network computers, or even just Java, as their client/server architecture. Microsoft hasn't announced plans to port Office to Java, and its ActiveX component strategy hasn't set the world afire.

Cowpland sees Java and the network computer as the next big things, and Corel will be among the first major applications houses to catch the wave. That's good news because, whether you're a network computer customer or not, an applications suite helps Java gain parity with Windows as a desktop environment. And if that succeeds, a new era begins.

Coursey, an analyst and consultant, is editor of "coursey.com," an industry newsletter available at www.coursey.com. Can Corel challenge Microsoft? Does a Java suite matter? Send a note to david@coursey.com with your opinion.

Charles Babcock

The redcoats – er – the year 2000 is coming

Louis Marcoccia is the man whom fate has picked to play Paul Revere regarding a problem that many IS shops in the federal government wish would just go away.

"The year 2000 is coming, the year 2000 is coming," he cries, as he testifies before Congress, appears on TV and flies around the country speaking at seminars.

In his day job, Marcoccia is director of data administration and year 2000 projects at the New York Transit Authority. Why is a local official worried about the feds? Because five years ago he put his house in order and became a rare government official willing to speak out about the year 2000 problem.

He knows the challenge is bigger than a few systematic date changes. He knows what a confused state legacy systems are in. At the Transit Authority, his team had to cut applications from 112 to 50, define data and impose a homegrown change control system.

Preparing for 2000 is expensive because of this cleanup process. To justify the expense, IS managers must explain the mess to top managers: missing source code, no documentation, original developers gone, data undefined. They are reluctant to draw this picture lest they be held accountable. So a conspiracy of silence prevails. Top management can't believe it's that big a deal, and IS management can't quite bring itself to state the full scope of the problem.

City and state systems interact with federal systems, and their year 2000 changes also must be made in time. But the federal government should take the lead, Marcoccia says. Instead, it faces imminent disaster.

"In the 1997 federal budget, there are no dollars for year 2000 work, which astonishes me," he says.

IS shops that don't have the work done by the end of 1998 won't get the benefit of going through a year-end closing before the new century. At the end of the year, accounting's general ledger and other systems need the year's totals and reconciliations to close out the books. A closing is difficult to execute as it is, Marcoccia says. If IS waits until thousands of last-minute date changes have been put into production systems, processing could simply break down on Jan. 1, 2000.

At a congressional hearing on April 16, a parade of federal IS spokesmen said their departments will become year 2000-compliant. But Marcoccia says he doesn't believe what he heard that day.

"The Department of Defense has 1.4 billion lines of code. They're clearly not going to make it," he asserts.

The problem is much bigger than changing "99" to "2000," although that task is big enough. The Transit Authority had dates in 4% of its lines of code. For the average IS shop of 10 million lines of code, that's 400,000 changes.

Beyond date changes, an IS staff must know whether it has the right mix of operating systems, subsystems, databases, languages, and packaged or in-house applications to implement compliance. If you don't already know the scope of your problem, you can't solve it in time, Marcoccia warns.

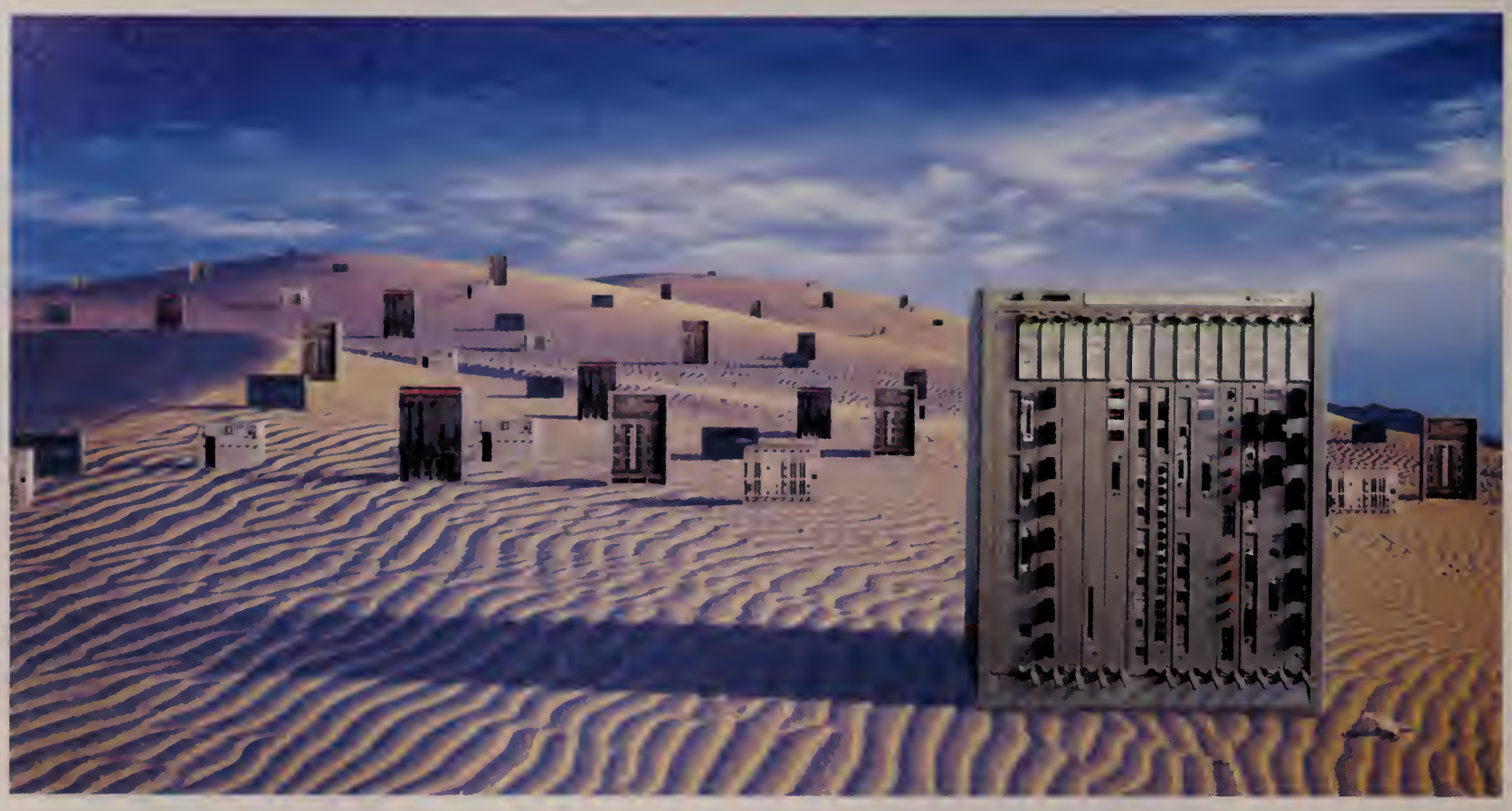
"It takes a year to 18 months to upgrade the average general ledger system, and that's prepackaged software," Marcoccia says. If you upgrade your in-house applications but overlook a date reference in one program on which they depend, your systems can be brought to a halt.

"I know. I've been there," he says.

Maybe in the big federal agencies, they just avoid bringing it up.

Babcock is *Computerworld*'s technical editor. His Internet address is charles_babcock@cw.com.

Less Is More.



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